

# COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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## *Ways of Making a Profit*

**M**AKING selling prices has been declared to be an art, whereas accounting is a science. Determining a sales policy in 1921 for the conduct of a bituminous-coal property has been more a matter of pre-war training and general "hunch" than either science or art. For instance, there is the class of concerns that made reasonably profitable contract prices early in the year, tied up what tonnage they could at those prices—usually with old, reliable customers—and have been content thereafter to produce only the coal their customers required. Such a policy has been the most conservative of any followed. These shippers have made no attempt to meet the spot market, their prices being generally above that obtaining for current sales, even at the time they closed their contracts. They have been able to move coal at from 50c. to more than a dollar above the market because they have an established trade that for this one year at least has been willing to pay a premium to a reliable shipper who in 1920 did not demand the high market prices and delivered 100 per cent and more on his contracts.

Whether the producer who followed such a policy in 1921 can repeat with success in 1922 is an open question. In some if not many instances the consumer will conclude that he has discharged his obligations for protection in 1920 by paying a premium in 1921. It appears, however, that those who took and maintained a firm stand on prices in 1921 and who had a satisfied clientele have suffered no serious losses and some have made a little profit this year, although operating on a considerably reduced scale.

At the other extreme is the class of operator who refused to contract last spring in the belief that the market was only temporarily in the dumps. Such operators have been in hot water all year, operating intermittently, throwing coal on the market on consignment and too often selling at distress prices. For the most part shippers who chose this policy have depended largely on jobbers to place their tonnage and, because the spot market has been regularly so low, have profited little, if they have not generally taken losses on the year's business.

The largest tonnages have been moved by those who contracted all they could at the best figure in each instance they could obtain, and then went after business in the open market, direct and through jobbers. By a combination of intensive selling and setting prices just under the market such producers have in a number of instances more than doubled their output for 1920, itself a high record year. Labor and cars have flowed to him who could give them work and high tonnages have operated to lower average costs and have thus sustained production at a profit at comparatively low prices.

On the whole the bituminous-coal industry has made no profit this year. Those fields that produce domestic

and steam coal have been whipsawed the entire season, first because of no market for the resultant prepared sizes and in later months because of no market for screenings. Nevertheless the best-managed lower-cost operations have come through the year so far with no red ink on their books, and some have had the most profitable year on record. Those who cut prices and moved large tonnages have the largest measure of profit if not the highest average net return per ton of output, but whether in the long run they have done well is an open question. The answer depends on individual circumstances, not the least of which is the extent to which they have sacrificed reserves of high-grade coal.

## *Finding Uses for Fine Coal*

**M**ANY manufacturers, when they have their product perfected, find themselves compelled to look around for some place where they can place it and to discover how by appropriate changes it can be fitted so as to be of use in some of the many industries to the needs of which it is in certain ways suited. To this end they send out experts and establish bureaus of research and finally by advertisements and personal solicitation they introduce their product to people who, at first, had no idea that they needed it.

A little less than a century ago anthracite was a product for which no one felt any particular need. It was not even road-making material. A stove had to be developed that would burn it. Iron masters had to be induced to try it out in their furnaces. But soon thereafter anthracite became recognized as a fuel, and for the most part the main effort of the seller from then on was to sell his particular brand of anthracite rather than to sell coal in general. In most cases those that wanted anthracite knew they wanted it, and the question was only *which* anthracite did they prefer, and that was decided mostly on the presence or absence of ash.

In consequence coal men have been slow to undertake research work. They have left it to consumers to study out the problems of combustion, gas making and the manufacture of byproducts, and, seeing that the consumer and the equipment manufacturer have done this work more or less satisfactorily, perhaps it is as well to leave it in general to them. It may be pointed out, however, that the fact that coal has sold without technical assistance has made the coal man somewhat unprogressive in places where solicitation by advertisement and agents and research by experts might greatly assist in enabling him to rid himself profitably of that part of his product that he must make and cannot sell except at a loss. We refer to his fine coal.

It would pay the owner of mines to ascertain by experiment what is the best method by which to pulverize coal and to burn it when pulverized, to discover where it can most profitably be used and to promote the sale of atomized coal by spreading a knowledge of its

advantages. It would furnish a ready opening for his "bug dust" and his smaller sizes. The Susquehanna Collieries Co., sets a good example in this direction.

An interest in discovering the best form of domestic furnace for the burning of buckwheat and smaller anthracite would be well rewarded. When the discovery is made it will revolutionize anthracite mining and save the expense of carrying tons of fuel in storage for many months and even years. It will hasten the time when sludge will be turned into burnable material and it will make it possible to use up the fuel in the old waste dumps, and do it not at a small margin but at a big profit.

The action of the Hudson Coal Co. in making experiments in anthracite and of the Lehigh Coal & Navigation Co. in entering into the briquetting business are instances of enterprise by no means too common. A study in producer- or water-gas making using fine coal is another form of activity that some anthracite operator should be investigating. Every large company should have its research department and every possibility opened up by that department or discovered in some other way should be sold to the buying public by a department for that purpose.

It has been found by the copper producers that the metal will not sell itself in sufficient quantities to balance productive capacity. It has been discovered that inferior substitutes were edging it out of some markets. Many of these it had held undisputed before the day when electrolytic deposition made it possible to manufacture an inferior article having a temporary semblance to the real. There is only one answer to the problem—research and mercantile activity—and there is only one reply to the question "What shall I do with fine anthracite?" Ascertain how it best may be burned for any one of a dozen uses and then by advertisements and roadmen make the facts generally known.

### Public Interest in Strikes

**P**UBLIC opinion is the most powerful force in this country and its influence is felt and its support sought in every industrial dispute. Doubtless the time will come when economic maladjustments will be studied, treated and healed just as are epidemics that attack the human race. But until that time arrives we must needs deal with the sterner realities of strikes.

The rescinding of the railroad strike order was an impressive exemplification of the great power of enlightened public opinion, according to the Guaranty Trust Survey, which notes that it was "in this instance so unmistakably demonstrated that the majority of the people throughout the country believed the threatened strike was a grave menace to business and absolutely unjustified. There are many evidences, in fact, of a widespread conviction that the strike vote of the railway brotherhoods was intended to prevent the proper readjustment of railway wages in line with the wages of other workers and with reduced living costs—in brief, to make secure the preferred economic position of certain favored elements of organized labor at the expense of the public and of all other workers."

The opinion now prevails that a strike of coal miners next April is inevitable in the course of wage readjustments. The part that arbitration may play in the 1922 settlement is now a matter of current comment and speculation. There is an undercurrent of feeling

that so far as the market is or may be concerned, a strike of some duration would be welcomed. This is particularly manifest with those whose business it is to sell coal. Such a feeling is traditional in the bituminous coal industry, a business in which profits are for the few save when coal is in short supply and strong demand, as when there is a car shortage or a labor strike.

The public is somewhat inclined to be skeptical. It is being said that although the law prevents combinations among operators to raise or maintain prices, and appears to be about to decree that operators and labor shall not make certain agreements, there is nothing to prevent both from agreeing to disagree, thereby shutting off production and elevating prices of coal. At a recent meeting of the Academy of Political Science, Herbert Hoover, in discussing "Good Will and Co-operation in Industry," spoke of the primary interest of the public in certain classes of strikes and industrial controversies. According to the *Iron Age*, he divided industries into two categories, one of which included the transportation and the coal industry, where continuous operation is vital to the life and safety of the community and where there is no alternative to some substitute service, and the other category including those industries from the continuous operation of which there is alternative supply without imperiling the life of the community. Of the latter he said that the public takes but a secondary interest in the dispute arising therein, but of the first group the public is impatient to find a solution.

"As a result of these things," said Mr. Hoover, "we have seen the gradual extension of the arm of the public to these disputes through both administrative and legislative action. We also witness this extension of public interest bitterly resented both by the employers and employees. The primary instinct of the public is self-preservation first and last, and where 1 or 2 per cent of the whole population may jeopardize the comfort and security of the other 98 per cent I do not believe that they can be restrained from exerting a commanding voice, however much it may be resented by either side.

"The thing that must concern us all is that the entrance of the third party into these disputes will be in such form that it does not increase the ill-will, that it shall be in such form as will secure justice, and that will preserve the very foundations of initiative and that type of American individualism upon which our whole social system is based, and that it will recognize the fundamental necessity to build up good will itself."

The dispute that is to come up for settlement next spring may be adjusted by arbitration without a strike or following a strike, or there may possibly be no arbitration, but instead the union may do as the railroad workers did—recognize and admit the futility of a resort to the time-honored show of force. Just what will happen no one knows, but of one thing we can be fairly certain—the public and the government are not inclined to accept any measure of hardship while operators and miners follow a policy of agreeing to disagree. It was reported from Washington that during the Unemployment Conference certain representative operators from the Central Competitive Field indicated their willingness to arbitrate for a new contract next year, but that the Mine Workers' representatives declined the invitation. The country should have this circumstance more clearly in mind as winter passes and spring complaints arise.

## Devices for Speeding Low-Temperature Carbonization And Procuring a Dense and Non-Friable Product

Carbonizing Retorts Set in Shaft of Gas Producer—Cast Iron Versus Re-ractories—Revolving Barrel with Solidifying Roller—Thyssen's Rotating Cylinder with Interior Spiral—Thomas' Lined Cylinder with Spiral Conveyor

BY A. THAU\*  
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MUCH has been written in recent years concerning low-temperature carbonization and many descriptions have appeared in the technical press, so that the advantages and disadvantages of this type of coking are well known and need no comment here. Although this process is received in some quarters with open hostility and in others with an optimism that can hardly ever be justified, the fact remains that low-temperature carbonization has thus far gained a small, yet nevertheless sound, footing in all coal-mining countries. It is doubtless destined to fill the gap between high-temperature carbonization on the one hand and gas producers and the consumption of raw coal on the other.

### WHY GERMAN SEMI-COKE EXPERIMENTS LAGGED

In the United States the Carbocoal process of low-temperature carbonization probably leads all others but several other plans and processes appear promising. In England, where low-temperature carbonization originated, the Coalite process predominates. The Delmonte-Everett and the Tarless Fuel plants have hardly as yet developed beyond the experimental stage.

Low-temperature carbonization was taken up in Germany at a comparatively late date. This was chiefly because that country did not possess a fuel that could be utilized to the best advantage in such a process. In judging the relative conditions prevailing in Germany one must keep in mind the fact that the bulk of the coal there mined is rather lean. What fat coals are produced the gas industry readily absorbs, and slack that is high in volatile matter is carbonized in byproduct coke ovens. As this fuel is not mined in sufficient quantity to maintain the large coking industry, it is invariably mixed with lean slack.

Open-grate domestic fires are practically unknown in Germany, closed stoves alone being employed. These assure a combustion so thorough that the towns are only slightly troubled by smoke and soot. It is evident, therefore, that little incentive existed to attempt low-temperature carbonization. Consequently prior to the war the only efforts made in this direction lay in the field of scientific research.

The war, isolating Germany from the rest of the world, altered this condition considerably, and an acute shortage of motor fuel and lubricating oils brought the low-temperature carbonization process into prominence as a possible solution of this difficulty. As Germany throughout the progress of hostilities occupied the position of a beleaguered fortress, little information leaked out as to the progress made in this direction.

The fact, already mentioned, that no appreciable quantities of high-volatile coals exist in Germany, excludes from the very start the possibility of the development of low-temperature processes with such fuels as are available in other coal-mining countries like the United States and England. By the terms of the peace treaty Germany is compelled to supply large amounts of its best coal to her former enemies. The remainder is so rationed among its consumers as to discourage experiments involving uncertain economic results. The conditions imposed by the peace treaty, therefore, render necessary a greater and more economical use of the huge lignite deposits. It is in this field, accordingly, that low-temperature carbonization finds a broad scope.

Suggestions have been made, and in isolated cases put into practice, that coal that is to be gasified in producers be passed first through a separate low-temperature carbonizing retort, thus extracting the oils from the gases issuing therefrom, and then be further gasified in the producer, enriching the gas evolved in this device by that given off during low-temperature distillation. Such plants, however, are a decided exception, as quite similar results may be secured by much simpler means, obviating large mechanically operated plants in conjunction with gas producers.

In the cases above cited, however, the carbonizing retorts are placed vertically within the shaft of the producer, their open bottoms terminating over the fuel bed of the latter device. Each retort is heated externally by the hot producer gas surrounding it and occupying the upper zone of the producer. The fuel within the retort also is gently heated by the ascending gas.

The retorts are provided with a separate take-off from which the gas is conducted to a plant where the oil is recovered. After this, gas is mixed with that emanating from the producer proper. Many such producers were built during and shortly after the war, and still more plants have been rebuilt so as to embody such arrangements. The large quantity of oil obtained by

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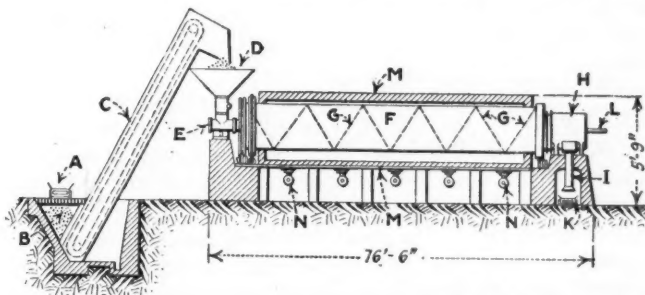
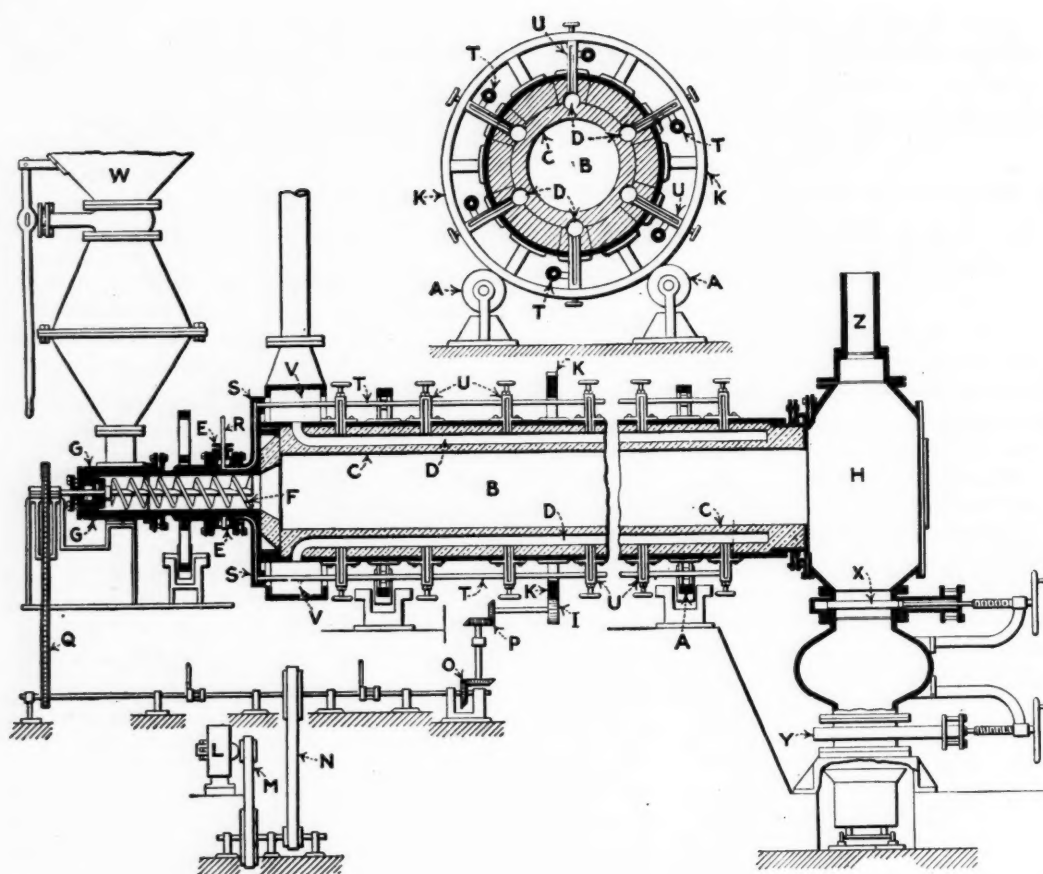


FIG. 1. REVOLVING RETORT FOR MAKING SEMI-COKE

In the interior of the retort is a spiral rib which moves the coal slowly from inlet to outlet. As fast as the coal reaches the orifice it falls onto a belt conveyor. The gas is taken off by a suction line. One hundred tons can be carbonized every 24 hrs. The product can be used for fuel in gas producers or for briquetting.

\*Coke Works superintendent, Oxelösund Iron Works.

†In America an explosive is known by this name.



FIGS. 2 AND 3.

### Cross-Sections of Thomas Revolving Retort with Discharge Gate

The longitudinal cross-section has been made on a somewhat smaller scale than that at right angles to the diameter of the cylinder, so as to make the details more clear. This retort is of steel plate but is lined with firebrick with heating flues. The cylinder is evenly heated by bunsen burners to a temperature of 930 deg. F. The slide valves in the lower right-hand corner are so operated that the semi-coke is dropped out at the gate without admitting air.

this means has assisted appreciably in making up the deficiency above noted and in alleviating the scarcity of lubricating oils.

Apart from these producers, supplemented by primary low-temperature retorts, the low-temperature carbonization process found its greatest application in the utilization of fuels low in calorific value, such, for instance, as lignite and even turf. German inventors could learn little from England, for in that country such processes were chiefly applied to the treatment of rich coals and had been adapted to their use. Comparatively little also could be ascertained of efforts made in this direction in the United States prior to the war.

Germany was thus compelled to begin anew. Experimentation was conducted mainly in the excellently equipped coal-research institute at Mülheim on the Ruhr, with the well-known coal-research chemist, Prof. Franz Fischer, as chief. The results of the work there undertaken, particularly with reference to the low-temperature distillation of coal and other fuels, has been published in several volumes. The empirical rules which the process had thus far more or less followed have been supplanted by properly defined and scientific formulae.

Methods generally applied to low-temperature carbonization prior to the war strongly resemble those of gas works, the chief difference being that a specially selected cast iron was used in the manufacture of the retorts. This metal, of course, possesses the advantage of high heat conductivity. Its great disadvantage, however, lies in the fact that the continuous heat causes the iron to "grow," this swelling continuing until the shell begins to scale off and waste away.

It is thus significant that the low-temperature carbonization processes that have actually been introduced in working practice have discarded the cast-iron retort

and adopted one made of refractory material. This applies alike to the Carbocoal process in America and the Coalite process in England. In a number of other low-temperature carbonization installations cast iron is used, as, for instance, the Greene-Laucks' plant and in the English Tarless Fuel plant.<sup>2</sup> In the Delmonte-Everett plant,<sup>3</sup> the retort is made of steel. These last mentioned processes, however, have not as yet attained large commercial dimensions.

Germany could not gain materially from the experience of other countries, so it made a fresh start altogether, and found that the solution of the problem that would best meet the prevailing conditions was the introduction of a revolving retort. Prof. Fischer built this on an experimental scale at the coal-research institute at Mülheim on the Ruhr.

Carbon, as is well known, is a poor conductor of heat. Though heat will penetrate satisfactorily a thick layer of densely packed coal in the high-temperature coking process, it will not do so when low temperatures are applied. As a rule, therefore, such an increase of temperature on the heated surface is necessary that the structure of the semi-coke is uneven, being hard on the outer end and becoming gradually softer toward the center of the charge. In consequence pieces of coke are formed that are both friable and brittle.

In coke ovens and gas works coal can be carbonized in large masses, but in a low-temperature retort it must be fed in such a comparatively thin layer that it will be quickly penetrated by the heat, for a high temperature cannot be applied to its outer surface. This precaution is taken in the English Coalite process. Here the charge is fed over large retort surfaces so that

<sup>2</sup>See *Coal Age*, Vol. 15, p. 810, 1919.

<sup>3</sup>See *Gas World*, 1913, p. 680.

<sup>4</sup>See *Gluckauf*, 1914, p. 839.

the thickness of the layer will seldom exceed 4 inches.

To insure an even temperature throughout the entire charge and to prevent it from being overheated on its outer surface, the coal is sometimes agitated within the retort by a paddle conveyor which mixes the material thoroughly and simultaneously propels it to the coke outlet at the end. This arrangement is frequently adopted and is typical of the Carbocoal process with horizontal retorts, the Delmonte-Everett process with inclined retorts and the Greene-Laucks process with vertical retorts.

To avoid the use of mechanically operated agitators and conveyors inside the heated chamber and to obtain the same effect by more desirable means the entire retort is rotated. It is in this direction that low-temperature carbonization has developed in Germany. Such arrangements were already in use for other purposes, but Prof. Fischer applied them successfully to low-temperature coking. Its application, with certain variations in design, adopted by other inventors, is almost universal throughout Germany. Prof. Fischer found, however, that in the ordinary revolving retorts the coal is so much disturbed during coking that although the yield of oil is exceptionally high, the formation of coke is much impaired.

To overcome this difficulty efforts were made to compress the coal while the heat still keeps it plastic. Prof. Fischer experimented with a revolving retort 59 in. long and 20 in. in diameter, resting horizontally upon rollers. This device was charged with 20 kg. (44 lb.) of ground coal, and a solid roller about 4 in. in diameter and of the proper length was placed within the cylinder. This retort was surrounded by a chamber serving as an oven, and was heated from below by a number of vertical gas burners as it revolved slowly.

The coal distributed itself evenly about the periphery of the retort, and as soon as it reached a plastic state, adhered to the shell, covering its interior surface uniformly. As the heavy iron roller inside the retort tends to move toward the lowest point, it rotates continuously and automatically and compresses the coal in proportion to its plasticity.

#### WHEN COKED, SHELL BREAKS DOWN AND FALLS

As soon as the charge is carbonized completely and all volatile gases and vapors are driven off, the cylindrical coke shell breaks down and falls. This makes itself known by a distinctive noise within the retort. At this point in the process the heat is cut off and the revolution of the retort stopped, after which the coke can be withdrawn. By this means a good hard semi-coke of even texture was obtained. Promising as this design appears and operates experimentally, its obvious disadvantages are too great for the development of the process upon a large commercial scale.

A revolving retort that has been built for several large commercial plants is that invented by Thyssen and shown in Fig. 1.<sup>5</sup> The fuel, after having passed a screen or mill, is brought by a conveyor, *A*, and discharged into the pit, *B*. Thence the elevator, *C*, transfers it to the charging hopper, *D*, under which a short screw conveyor, *E*, is mounted. This transfers a certain amount of coal continuously into the cylindrical revolving retort, *F*, which is 70 ft. 6 in. long, including its foundation, and is made of steel plate.

On its inner surface it is provided with screwlike

ribs, *G*, which move the coal slowly through the retort as it revolves. At the discharge end the retort is connected to a stationary receptacle, *H*, with an outlet, *I*, which discharges the coke continuously onto the conveyor, *K*. To the end of the receptacle *H* a pipe, *L*, is connected, serving as a suction line for the withdrawal of the gases given off by the fuel. The retort is surrounded by an oven, *M*, built of brick, heated from below by a row of burners, *N*. With the dimensions shown in Fig. 1 this retort has a capacity of about 100 tons of coal per day of 24 hours. The semi-coke discharged can either be used as fuel in gas producers or can be briquetted if pitch be added as a binder.

#### AMERICAN SCHEME WITH FIREBRICK FLUES

Although the revolving retort is the type most commonly used for low-temperature carbonization in Germany, its application is by no means confined to that country. A similar device of American design, invented by Thomas, is shown in longitudinal section in Fig. 2, and in vertical cross-section in Fig. 3.<sup>6</sup> In this design, heavy rollers, *A*, support the retort, *B*, which, depending upon the variety of fuel to be treated, may be as much as 100 ft. long.

This retort is made of steel plate, the inner surfaces of which are covered by a strong fire-brick lining, *C*. The lining is provided with a number of heating flues, *D*, extending parallel to the retort cylinder. These are equally spaced around the circumference of the retort. By means of a gland, *E*, the interior of the retort is connected on one end with the stationary cylinder, *G*, in which the spiral conveyor, *F*, revolves. At the opposite end the retort terminates in another gland connecting it with the chamber, *H*.

The retort is revolved by means of the pinion, *I*, or a worm in gear with the worm wheel or toothed ring, *K*, encircling the retort at its middle point. The pinion, *I*, and the screw conveyor, *F*, are driven from the electric motor, *L*, by means of the belts, *M* and *N*, the gear wheels, *O* and *P*, and the chain, *Q*. Gas for heating the retort is conducted through the pipe, *R*, connected to the gland, *E*. It enters the channels, *S*, which revolve with the retort.

By means of pipes, *T*, the bunsen burners, *U*, are fed from these channels, the burners distributing the heat throughout the flues, *D*. The whole retort is thus evenly heated, so that its interior temperature does not exceed 500 deg. C. (930 deg. F.). Near the charging end the heating flues, *D*, are open and are surmounted by the stationary channel ring, *V*, which on its top carries a steel chimney for escape of waste gases. This also furnishes the necessary draft for the flues, *D*.

Fuel to be treated is conveyed by suitable means to the hopper, *W*, this being connected by means of a gas-tight slide valve with the heating receptacle on top of the conveyor cylinder, *G*. The fuel in this receptacle is replenished as required by opening the slide valve under the hopper, *W*. The fuel dropping into the cylinder, *G*, is transferred by means of the conveyor, *E*, into the retort, *B*. By the revolution of the retort, each individual particle of coal comes in contact with the heated inner surface.

The continuous feed gradually drives the fuel toward the discharge end of the retort, where it drops into the chamber, *H*, closed at the bottom by means of the gas-tight valve, *X*, under which a receptacle is placed, also closed at its bottom by a valve, *Y*. By opening

<sup>5</sup>Stahl & Eisen, 1920, p. 743.

<sup>6</sup>See Gluckauf, 1919, p. 552.

the upper valve, X, the coke falls into the lower receptacle and by closing X and opening the valve, Y, it drops out without the escape of gas from the retort and without influencing the suction applied to it. After leaving the retort the coke falls into the quenching car or may be cooled on a conveyor. Pipe connection, Z, conducts to the byproduct plant the gases emitted in coking.

This retort is well designed and differs from all

others in that it is not heated from a single point but, as may be seen in the cross section Fig. 3, from six equally spaced rows of burners which revolve with it. This secures the obvious advantages that the retort itself, is a self-contained unit and does not need to be placed in an oven but is readily accessible from all sides. It revolves so slowly that the burners can be adjusted without stopping the revolution of the retort.

## Grid Resistors for Mine Locomotives and Their Care

Current-Carrying Capacity of Resistor Steps Inadequate to Operate Continuously on Any One Controller Notch When Locomotive Is Pulling Its Heaviest Loads — Resistor Usually Designed for Starting in Parallel

BY H. H. JOHNSTON\*

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THAT resistors are invariably used upon and furnished with any and all mine locomotives should be sufficient evidence that they are necessary parts of such machines and should not be slighted during periods of inspection and overhaul. The main resistor is primarily provided for the protection of the motors and to afford smooth acceleration with the aid of the controller and its notching scheme. Thus the use of the combined resistance and control makes it impossible to impress instantly the full line voltage across the terminals of a standing locomotive, thereby forestalling excessive starting currents with attendant injury to motors, gears and other mechanical equipment. It also prevents the locomotive from drawing an undue proportion of the current, robbing other equipment about the mine which must obtain current from the same line.

Poor or rapid notching-up on the controller, as it approximates the ill effects of using no resistor, is injurious to the motors. Locomotive drivers and others who handle similar equipment that requires starting or accelerating apparatus should be given more instruction than is usually afforded them as to the saving of time and power and the reduction of maintenance costs by the proper manipulation of such equipment.

With mine locomotives of either main-haulage or gathering type the current-carrying capacity of the various steps in the resistors seldom is large enough to make it safe to operate continuously on any one controller notch or point while the machine is pulling its heaviest load. The reason for this is readily discern-

ible. A 20-ton 250-volt locomotive should be provided with a resistor having a total starting resistance of approximately 0.5 ohm. If this is required to carry currents corresponding to the slipping point of the wheels it would mean that approximately 70,000 to 100,000 watts would have to be consumed in the grids beyond the second and third steps of the resistor. To say nothing of the power loss and heat that would necessarily have to be dissipated, an excessively bulky resistor would be required. In most cases such a large piece of apparatus could not be put on a locomotive if it is to be limited to the dimensions necessary for operation in a mine.

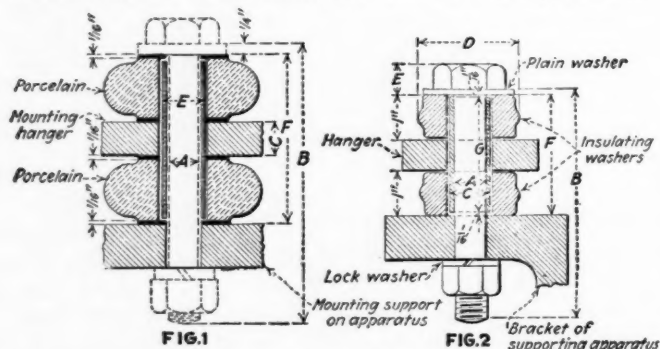
Many combinations of resistor assemblies are possible for any one size of locomotive. The one to be chosen will depend upon (1) type of controller, (2) service, (3) gear ratio, (4) type of motor, (5) drive-wheel diameter, (6) line voltage and (7) the characteristics of the resistor elements themselves, including their capacity resistance, their weight and the ventilation afforded by the method in which they are assembled.

The type of controller will determine the number and arrangement of the resistor steps so far as resistance and capacity are concerned. The service will determine the ohmic value required in the total resistor as well as in its various steps. The type of motor and its characteristics fix in a general way all essential attributes of the resistor. The gear ratio will determine in part the speed and tractive effort of the locomotive. The higher the gear ratio the lower the speed and the greater the tractive effort for a given current consumption. Consequently the total ohmic value required for starting a locomotive of a given weight will be decreased as the gear ratio is increased.

The wheel diameter also will partly fix the speed and torque characteristics of the locomotive. The greater this diameter, the higher the speed and the lower the tractive effort. A greater driver diameter will require a smaller starting resistance. As the wheel treads wear, the tractive effort will gradually increase for the first point of the controller. Ordinarily this will not be noticeable unless the trolley voltage is constant or higher than normal.

Line-voltage fluctuations mean corresponding changes in starting current and tractive effort. As the starting resistor usually is fixed in size and capacity, consideration must be given to both maximum and minimum voltages.

Having given consideration to the service to be per-



FIGS. 1 AND 2. METHODS EMPLOYED IN INSULATING RESISTOR ELEMENTS

Fig. 1 shows porcelain insulators and Fig. 2 moulded washers. The frames of resistors should be insulated from the frames of the locomotives. This affords double insulation between grids and locomotive frames, thus eliminating grounds even in wet mines.

\*General engineering department, Westinghouse Electric & Manufacturing Co.

formed the grids or other resistor elements used must in themselves be of rugged mechanical design, have heavy overload capacity and an insulation capable of withstanding excessive heat. Ventilation is an important factor. Spacing grids close together will give more metal, but this advantage is largely offset by decreased ventilation, the tendency of this close grouping of grids being to cause hot spots.

It is good practice to insulate the frames of resistors from those of locomotives for both 250- and 500-volt machines. This affords double insulation between the grids and the locomotive frames and overcomes many troubles arising from grounding, particularly those encountered in wet mines. Porcelain insulation (Fig. 1) surrounding the mounting bolts also is advantageous. For this service moulded insulating compound has been used around the bolts as shown in Fig. 2 and satisfactory results have been obtained.

Resistor frames usually are mounted on locomotives

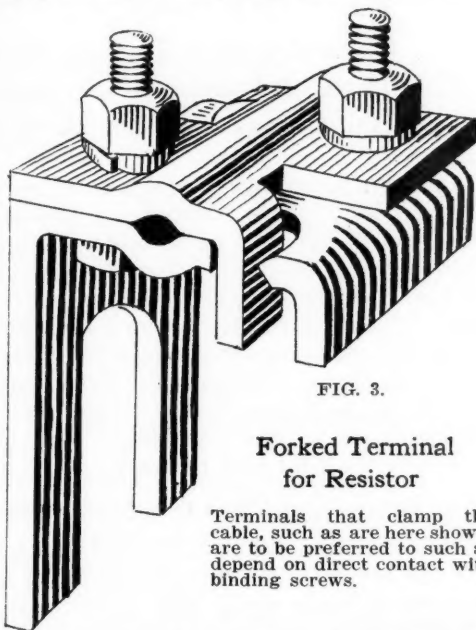


FIG. 3.

#### Forked Terminal for Resistor

Terminals that clamp the cable, such as are here shown, are to be preferred to such as depend on direct contact with binding screws.

in more or less out-of-the-way places, being those not occupied by other equipment. The grids tend therefore in some locomotives to collect so much sand, coal dust and other foreign material that their ventilation is impaired. If the grid frames are built up and mounted directly above a solid plate they are likely to become cluttered up in this manner. This defect usually can be easily overcome, however, by drilling a number of 1½-in. holes through the plate, thus allowing sand or other extraneous material to fall through.

In mine-locomotive service the controllers usually are of the series-and-parallel type, which permit the locomotive to start with the motors either in series or in parallel. This involves designing the starting resistor primarily for one or the other. If calculated for series starting, the tractive effort obtained on the first notch, when starting with motors in parallel, will be low because the resistance in the grids will be about twice that required to give good starting in the other position. It is customary to design the resistor for starting with the motors in parallel, whereas starting in series is possible, for the starting current consumed will be half that for parallel operation. It is good practice to use a system of control that necessitates starting in series, and in these cases the resistor is designed for such conditions.

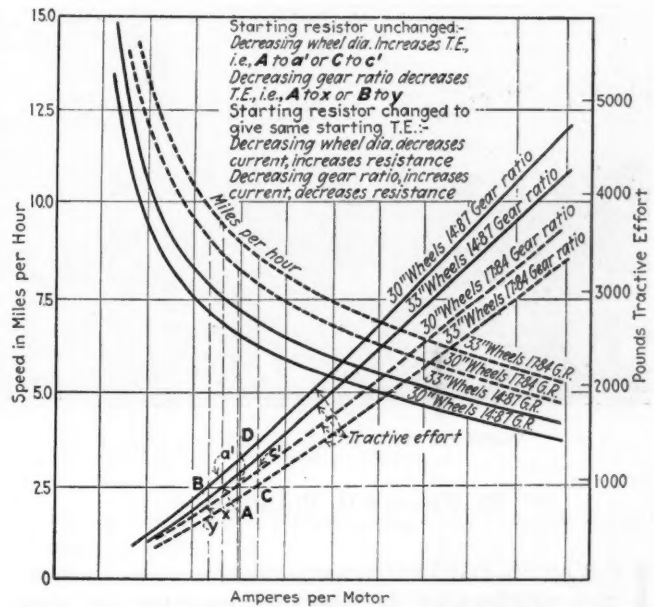


FIG. 4. RELATION OF TRACTIVE EFFORT TO MOTOR AMPERAGE, SPEED IN MILES PER HOUR, WHEEL BASE AND GEAR RATIO

This shows graphically how much decreasing the wheel diameter increases the tractive effort with the same starting resistor and how decreasing the gear ratio decreases the tractive effort when the starting resistor is unchanged. Keeping the tractive effort constant and changing the starting resistor, a decrease of the wheel diameter decreases the current and increases the resistance, and a decrease in the gear ratio has, as in the previous case, the reverse effect.

It is not well to operate a locomotive with grids cut out or short-circuited. A grid that has been broken or burned out should be renewed, care having been taken to replace it with a grid of the proper capacity and ohmic resistance.

Terminals that clamp the cable are preferable to those that depend on direct contact with binding screws, for in that case if the heat of the grids causes any tin to flow from the cable it will not interfere with removing the cable connections from terminals of this type.

The insulation should be removed from the cable for several inches back from the terminal connections to prevent its burning. Some operators make a practice of using flame-proof sleeving over the 6 to 8 in. immediately adjacent to the grid terminals.

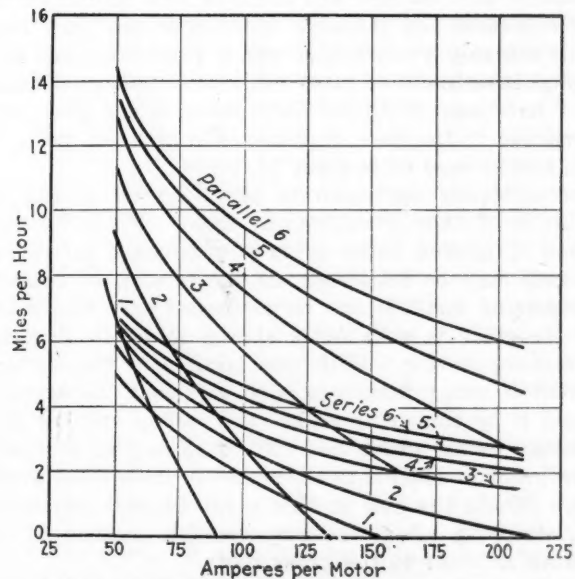


FIG. 5. NOTCHING CURVES FOR SERIES AND PARALLEL CONTROL

These are figured for a 20-ton locomotive with two 500-volt motors, 36-in. wheels and a gear ratio of 16 to 73.



VIEW OF THE BLANCHARD COAL CO.'S NO. 1 STRIPPING WITH SURROUNDING COUNTRY. MANY SMALL AREAS

BY WILLIAM G. BLANCHARD†  
Pittsburgh, Pa.

**I**T WAS REPORTED recently that a certain producer was withdrawing in utter disgust from the coal-stripping business. I tried to learn the reasons for this disgust, and when questioned on the subject this man gave answers that explained his failure. Among other things, he remarked: "Well, I can't get a production. If she ain't too hot she's too cold; if she ain't too cold she's raining, and if she ain't raining she's snowing."

Thus, without searching for the real truth, the elements were being blamed for difficulties that probably arose through some inherent defect in equipment or management. The result was that what had been conceived as, and what might have been made, an interesting and profitable enterprise had degenerated into a nightmare of trouble, loss and aversion.

Anyone who wanders around a bit may see coal-stripping plants so equipped and so operated that they never have a chance to win. These instances, however, are exceptions and not the rule, as many operators of such plants are not only achieving success in the industry but are also deriving much pleasure from so doing.

#### STRIPPING ONLY METHOD OF MINING SOME COAL

Readers of *Coal Age* are more or less interested in these successes and failures, as stripped coal now represents not only a respectable yearly production but also a capital investment of many millions of dollars. Therefore I have seen fit to set forth some of my ideas and experiences in the hope that they will prove of value to some, and at least of interest to others.

Coal-stripping operation is practiced by reason of the truth of four incontestable facts. First, by this method of mining many acres of otherwise unrecoverable coal may be reclaimed, as the mining of coal by underground methods can be conducted only where the roof structure is sufficiently strong to be in a measure self-supporting. With coal lying near the surface the roof in many instances is so soft that the attempt to hold it by timbering makes the cost of mining prohibitive. In the great majority of cases also this condition prevails when it is attempted to mine close to the crop. Should the coal at this point be still merchantable, stripping offers the only feasible method of recovering it "clear to the grass roots."

\*Note the two unmined areas in the stripping and the tippie just to the left of the concrete road, which is bridged by the approach trestle.

†General Manager, Blanchard Coal Co.

## Stripping and Selling Coal

Cover Up to 6 Ft. Can Be Handled  
Three Advantages—Stripper Spirals  
Half Circles and Then Backs Outward

Second, a greater percentage of coal may be recovered from any given body where stripping is economically possible than can be obtained by underground mining. This, of course, is not so evident; nevertheless it holds true where roof conditions are good and the bed reasonably thick. Under favorable conditions improved methods of underground operation may effect a recovery of as much as 95 per cent of the coal. Even under the most favorable circumstances, however, slips and caves occur, and coal is lost in ribs and pillars. This always materially lowers the total final recovery.

#### SHALLOW MINES LIKE STRIP PITS RUIN FARMS

Where roof conditions are not good and the overburden is light, the economic loss through mining by underground methods is much larger than is ordinarily admitted. For instance, one may walk over the rolling hills of Westmoreland County, Pennsylvania, and see thousands of acres of farm land totally ruined beneath which still lies many millions of tons of the highest-grade gas coal, lost to man for all time through improper mining unless the value of fuel rises to such a point as to permit the working over of these vast acreages by the stripping method.

The third basic fact to consider is that coal can be mined by the stripping method both with less labor and at less cost than is possible by underground mining. This means, of course, that the more expensive labor becomes, the more pronounced is the advantage of stripping. Forty men at a well-located and well-operated strip pit should produce 1,200 net tons of coal per day. More than half of this force is classed as common labor, and generally can be obtained no matter what may be the condition of the labor market.

Fourth, it is asserted that with this method of operation an organization can go into a property and within three days after the stripping shovel has reached the top of the coal can be producing tonnage at the maximum rate intended for the plant. This means that heavy carrying charges extending over long development periods are entirely obviated.

One might be led to believe from the advantages enumerated above that coal-stripping projects invariably



OF COAL PARTLY MINED EXIST ALL AROUND BUT IT IS DOUBTFUL IF IT WOULD PAY TO MINE THEM\*

## on a Dead Market—I

**Profitably—Rock Overburden Has  
Inward—Loader Follows Stripper for  
—Strip Wide and Beware of Inner Bays**

develop into advantageous and profitable operations. This is far from the case, however, as is shown by the many failures that have occurred that entailed heavy financial losses and blasted bright dreams of large profits. A general yet simple investigation usually will show wherein lay the cause of failure. Among the more common reasons may be listed, in the order of their importance, bad management, improper machinery, impossible physical conditions, inexperience and, lastly, lack of capital.

Bad management is listed first because in the majority of cases where stripping operations are started the physical conditions are favorable but poor management or the lack of all management allows many of these projects to "drift to the rocks." It usually is taken for granted that mining coal by the stripping method allows such a margin of profit that a mediocre organization can be maintained and a property operated without careful planning, yet with sufficient profit to represent an attractive return on the investment. Nothing could be further from the truth. One might well not even consider entering the industry unless he realizes from the start that, all things considered, the margin of profit is small and the risk involved is great.

### SITE RARELY FILLS ALL SPECIFICATIONS

As there is only a limited amount of coal available for operation by stripping, one cannot go out and select a property according to a previously drawn set of specifications. He may, however, study a property, judging as to whether or not its inherent characteristics are such as to allow profitable operation. One potent consideration is the grade of the coal itself—that is, whether it can be considered a gas, a high-grade steam or only a low-grade steam fuel.

Simultaneously the freight rate to the several logical markets must be considered, as must also be the amount of crop or soft, stained and unmerchantable coal that is likely to be found in the acreage and which must be left in the ground. The width of this inferior band of coal at times is so small as to be negligible, and under such circumstances the coal can be mined almost to the grass roots. In many places, however, where the roof condi-

tion is not favorable, weathering may extend back through an entire hill.

Next to the quality of coal the thickness of the bed should be considered, as should also the thickness and character of the overburden. Even a 3-ft. bed may be profitably stripped if overburden conditions are favorable. Open cutting loses its advantage of cheapness where the stripping expense per ton of coal exposed equals the cost of underground mining.

### SIXTY FEET OF COVER REMOVED WITH PROFIT

In considering overburden, it might be stated that covers up to 60 ft. in thickness may be economically removed, provided other conditions are right. In such a case, however, the ever-present rock must not be too hard. For a bank of this height, moreover, the coal bed should certainly not be less than 5 ft. in thickness. A rock contact and overburden, provided its structure is laminated, is in itself an advantageous circumstance, for three reasons: (1) It keeps the dipper and teeth of the stripping shovel free and clean at all times; (2) less swelling occurs in the spoil piles; and (3) as a general rule the coal under a rock overburden is firmer and less stained than where the cover carries little or no rock.

At the Blanchard No. 1 mine of the Blanchard Coal Co., located at Wyano, Westmoreland County, Pa., an 8-ft. bed of Youghiogheny gas coal is being stripped at one of its mines and worked under cover at another. The company has underground mines elsewhere. At the No. 1 mine the Pittsburgh bed pitches 8 per cent into the Port Royal syncline. The coal being developed lies just under the surface of a succession of knobs or hills with a maximum overburden of about 40 ft., consisting in the main of a soft laminated sandstone. If coal lying under such knobs does not develop too great a proportion of unmerchantable crop, any acreage that can be worked by circling completely around the crop line presents operating advantages unobtainable where it is necessary to travel back and forth along one side of the hill. Some of these advantages will be pointed out later.

Even with this small amount of overburden, compared with the thickness of coal as stated above (that is 40 ft. and 8 ft.), the largest shovel so far developed, even though it could handle a cover twice as high, is the proper one from an economic standpoint. A 340-ton 225-B Bucyrus machine with a 6-cu.yd. dipper, therefore, is being used at the Blanchard mine. A smaller 43-ton 35-B Bucyrus with a 1½-cu.yd. flat-bottomed special dipper is used to load the coal. This is mounted

on caterpillar trucks. The coal is hauled in 5-cu.yd. Western side-dump cars fitted with 10-in. side boards, hauled by 19-ton Vulcan locomotives on a track having a gage of 36 in. At the tippie the trains proceed onto a trestle, where they are dumped into a 500-ton storage bunker. The coal is elevated by a 4-ft. rubber conveyor belt, 100-ft. long center to center, to screens, crusher and loading pans. Railroad trackage is available for thirty empties above the tippie as well as for thirty loads below it.

In developing a property the entire area likely to be underlaid with coal should be staked out in squares, 10 yd. on a side. The stakes are then numbered from some arbitrarily chosen central position, as shown in the accompanying illustration (Fig. 1). After this, elevations are run from a base point on the coal to each stake. This, then, completes the field engineering for each hill, and makes it unnecessary to maintain an engineering corps, as a simple chart in the main office

and a similar one in the field office give any and all the information required.

By reading the position of the big shovel in the morning and again at night, one can tell from its reported position at any time the width of the cut the stripper is making, the height of the overburden which is being handled, and the amount of coal uncovered and ready to be loaded out. Also in an emergency one can determine from the main office just how many ties, or how much rail or pipe will be necessary to cover a certain part of one of the cuts.

For comparison, the stripping areas for different months are blocked out in distinguishing colors, and at any time, by a simple calculation, the amount of coal still remaining in the tract can be ascertained. Fig. 1 shows such a chart, the keeping of which is simple, but which gives at all times a valuable, accurate and visible picture of the various steps of development and the condition of the property. Each day the superintendent

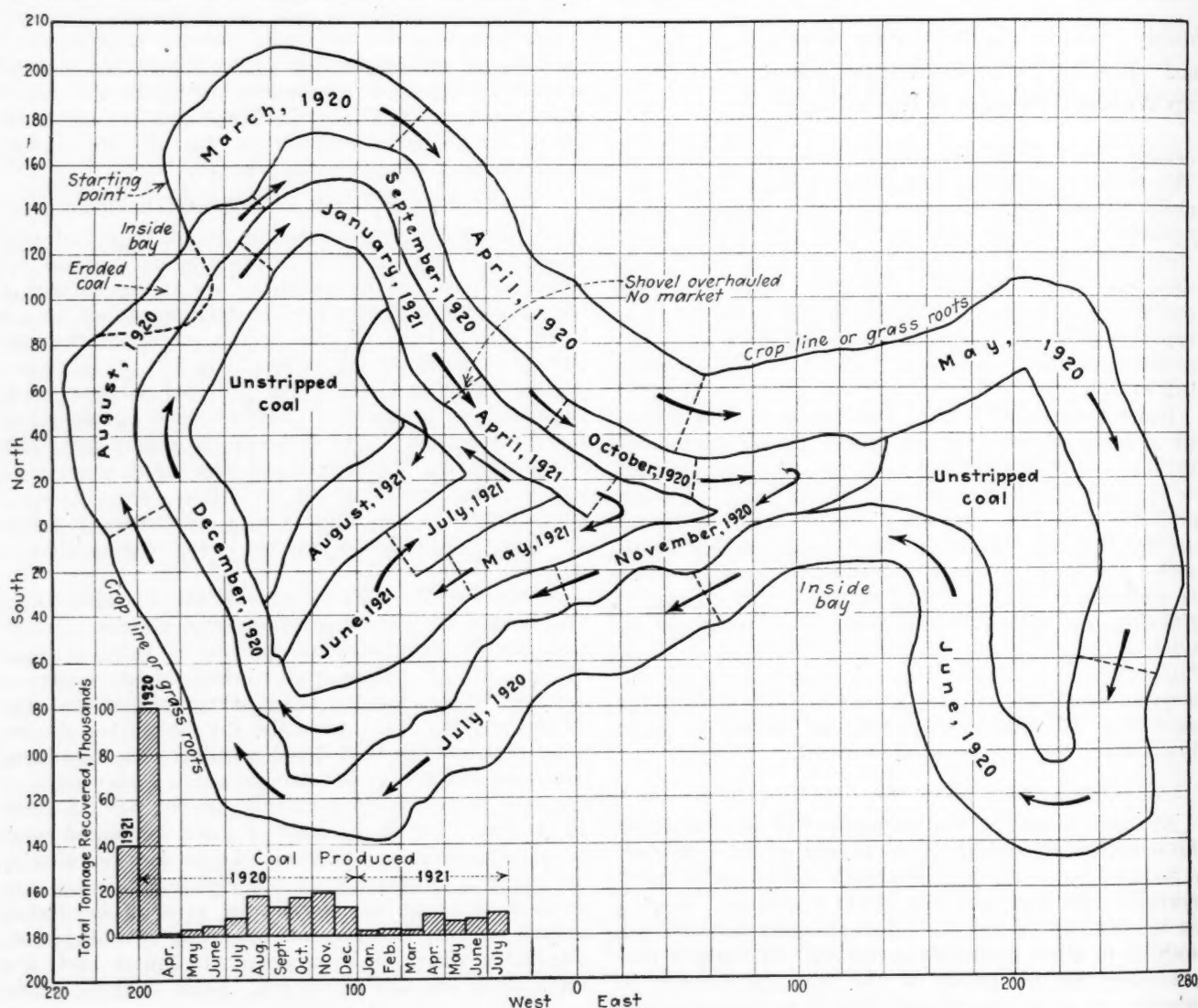


FIG. 1. PLAN OF THE STRIP PIT SHOWING HOW THE AREA IS DIVIDED INTO SQUARES, WHAT STRIPPING WAS DONE EACH MONTH AND HOW THE STRIPPER SPIRALS IN ON THE COAL

The plan shows simply the progress made in stripping and not in the removal of coal. This explains why the diagram of coal produced exhibits coal production in February and March of 1921, and the plan does not show any coal stripped at that time. The Blanchard property is run so that a shutdown of the stripper will not necessarily prevent the production of coal, because the loading shovel does not follow the stripper closely, as is the too-general practice. The loading shovel works half

the stripped semicircle in one direction and then works backward on the other half. The coal thus being entirely removed on the first semicircle the loading shovel is enabled to go to the next and take that coal out in the same way. Stripping goes fast when low cover is being lifted. Witness the run of the first few months. It becomes slower thereafter, when the cover becomes heavy. Then it is well to have coal to draw on. Note the two bays, one in the upper left, or northwest, and one in the lower right, or

southeast. In these the material is handled radially from the outside of the curve toward the center of the curve. The mass of material deposited near the center of the curve where the cover is large is, therefore, excessive and these re-entrant angles are to be avoided as far as possible even if it is necessary to cut on a chord across them and to remove "sterile" material that covers valueless coal or none at all. This was done at the point marked "eroded coal" near the left-hand bay.

at the mine sends in a tabulated report of operations. This carries all general information concerning daily operation. A study of these reports gives the time lost in delays, with the reasons therefor, and an analysis over any given period will bring out the weak points to be remedied.

After the preliminary work of surveying, the next consideration that must be taken up is the proper supply of water for the various boilers. One must guard carefully against a failure in water supply during dry periods and also against using water containing too much scale-producing carbonates and sulphates. As a precautionary measure a sample of the water available should be taken to a reputable laboratory and there analyzed as an insurance against serious boiler trouble later. At the stripping operation under consideration the water is elevated approximately 250 ft. through a 3-in. main to a large storage tank placed upon the highest elevation on the property.

#### BIG WATER TANK MAKES WORK MORE STEADY

It will be found that a large tank capacity is of great advantage in preventing temporary shutdowns arising from pump disability, freeze-ups, pipe breakages and the like. From the storage tank water is distributed to the shovels through a 2-in. main, buried, where possible, to prevent freezing in the winter. Where it is necessary to run the pipe in the open on the surface it has been found that a few smoldering fires fed with dirty or refuse coal, along the line and built directly under and around the pipe, will warm the water sufficiently to prevent freezing.

When the structure of the overburden becomes appreciably hard, it is drilled at regular intervals with a 5-in. bit by a No. 3½ Keystone churn drill. The holes, of course, are put down only to the roof coal, which generally runs about 3 ft. in thickness. Thus the average depth of the shothole is slightly less than the average thickness of the overburden. On the tract represented by the chart shown by Fig. 1 the depth of these holes averages about 25 ft. It will thus be seen that only a short time is required to drill each hole after spudding-in has been completed. To facilitate this work of spudding-in, the drill is equipped with special guides.

#### BLASTING A SUBJECT FOR CLOSE SUPERVISION

After drilling, the holes are sprung with a few sticks of dynamite at the bottom, thus forming a pocket to receive the black powder which is then poured into the hole. The most economical amount of dynamite for the springing, and of black powder for the actual blasting, together with the most efficient spacing of holes varies not only in different properties but in different parts of the same property, depending on the height of overburden, the amount of rock and its character. A conscientious and experienced powder man under a capable superintendent who watches the results of the various shots and the facility with which the stripping shovel handles the blasted material can make a large saving for the organization in the quantity of explosives used. This saving alone may closely approximate the total remuneration paid to both blasters and superintendent.

In developing a property the practice followed by this company is to travel around the coal body with the big shovel, keeping it moving always in the same direction and winding further in on each successive cut just as do the straw bands on the top of a summer hat. If

the plant has been properly balanced as to the capacity of each unit from the big shovel to the tippie it will be found that as the overburden in the first cut usually is rather soft, easy to handle and relatively small in amount, the stripping shovel will circle the hill twice as fast as the loading shovel can remove the coal. In taking out the first cut of coal, by watching the progress of both shovels one usually can so lay out the work that this condition will be exactly fulfilled.

At the start the coal shovel follows immediately after the stripping machine, taking out only a half cut of coal. As the width that the big shovel can successfully clean up is less than 45 ft., which is about twice that which the smaller shovel can readily load out, the above mentioned schedule is continued until both shovels are half way around the property. At this point the coal track is in the middle of the first half cut, which extends from the shovel to the point of entrance to the pit. This track is now thrown over to the inside of the cut against the bank, after which the coal shovel deserts the stripping machine and turns around, proceeding backward in the direction whence it came, removing the remaining half cut of coal in this first half circle. The coal track can then be picked up as rapidly as the coal shovel proceeds.

#### STRIPPER SPIRALS, COAL SHOVEL RECIPROCATES

With the stripper going straight ahead and the coal shovel returning, the two machines then proceed until they meet at the starting point. Here the coal shovel passes the stripper and starts over again, following the same routine on the other side of the hill with no delays in operation. It will thus be seen that there is always a cut extending half the entire length of the hill of coal uncovered as a reserve, ready for loading. An attempt is made to maintain this reserve at all times until the property has been fully and finally developed. The coal track can now be replaced as rapidly as men are available. When a track once more has been laid around the second half of the cut, no further track work is necessary until all coal has been removed from this cut, except, of course, the shifting previously mentioned.

In starting the second cut the big shovel usually encounters heavier and harder overburden and will need more time for tightening up and repairing weak places that have developed. Hence the reserve already established can be maintained but not increased and each shovel will complete a half cut in the same length of time. The routine above outlined is then continued as long as possible. It can be carried out with considerable precision if the hours of work of the big shovel are lengthened or shortened as necessary.

#### THREE ADVANTAGES OF THE METHOD DESCRIBED

Some of the advantages of this system of development are: (1) The stripping shovel never has to cast over the coal track, which, if found necessary, is expensive and dangerous and retards the operation; (2) a large reserve of uncovered coal is always maintained, which will tide over all ordinary breakdowns of the stripping shovel; (3) the coal track can be laid, picked up and maintained at much less cost than is possible where one shovel must follow directly behind the other, as is the usual practice.

In making the first cut with the big shovel it has been found that it is always best to strip clear out to the outer edge of the actual crop, no matter whether the coal is all merchantable or not. The purpose of this

procedure is to place the spoil from the first cut of overburden as far away as possible. The importance and advantage of so doing are not always evident until one has made two or three cuts into the hill and, getting into a 60-ft. bank, finds the cut narrowed down with not enough room to accommodate the material being dug.

If care is exercised to place the first and each succeeding cut as far away as possible, and the property is so laid out that it can be circled as mentioned before, a stripping shovel of the size and type used at this operation usually will handle an overburden up to a maximum of 70 ft. in thickness. On the other hand, if the superintendent is not careful with the first cut and becomes careless, feeling that everything is going along nicely, he is likely to find by the time a 40-ft. or 50-ft. bank is reached that he has dug himself in, and that he will have to cease stripping and go underground for the remaining coal.

In removing the first cut the leaving of inside bays must be avoided as far as possible. The reason for this is evident in that a great amount of spoil has to be crowded into a restricted area. This sooner or later will seriously hamper the operation of the stripping shovel. A sharp inside bay is shown in Fig. 1 at 150 East, 20 South. Had more cuts and higher overburden been encountered inside this bay it probably, later on, would have locked the stripper in with the spoil. However, had this condition been confronted in this case the stripper would not have remained at the crop of the coal but would have avoided making this bay by cutting straight across the sterile area for a short distance on the first cut. This would be done without uncovering any coal but exactly as was the procedure at the sharp bay shown on the west end of the property, at 100 North, 180 West.

#### KINKS FOR THE ECONOMICAL SHOVELMAN

It usually is advantageous also to make all cuts as wide as possible, for the fewer the cuts required to develop a given acreage the lower will be the cost of complete recovery and the less will be the amount of coal lost against the faces of each successive spoil bank. The idea seems to prevail that the stripping shovel in cutting should never swing farther than the inside corner. This does not always hold true, as in many cases it is of advantage to take all the spoil that can be reached, even if at times the shovel must swing over more than a complete half circle. The idea must not be given credence that the amount of yardage handled by the stripping shovel is the only factor to consider, for this is merely one of the elements that go to make up the cost of producing a ton of coal.

The runner of a stripping shovel should be watched carefully, and those details of operation that can be improved upon should be corrected at once, as their continuance day in and day out may cost many dollars in the end. An experienced stripping operator often drops his dipper into the pit and pulls it up loaded through the entire bank at each lift rather than take the material off in successive shelves. Or he may cast his spoil without regard to the face of coal against which he is filling. At this particular operation the rock coming from each successive cut is cast at the foot of the spoil bank and against the face of the coal. Rock thus deposited forms a kind of riprap that makes the loading of clean coal from this face easier. It also makes possible the removal of all coal without leaving a

retaining band against each successive spoil pile. If necessary, such a rock buttress or berm can be thrown up ahead to a height of 15 to 18 ft., thus serving as a strong and high retaining wall for the spoil which will remain in place long enough for all the coal to be removed and behind which a great amount of spoil can be stored.

Although the coal under the particular property being discussed is on an 8-per cent slope, no difficulty has been experienced in the operation of the stripping shovel. The only extra work that has been necessary in this case is to see that the shovel is kept approximately level from left to right as it faces the bank ahead. This is accomplished by carrying the low side on a set of short, heavy timbers.

A slope of the shovel from front to rear or from rear to front, considering the bank as being in front of the machine, offers no serious difficulties except that when handling a loaded bucket a little more care must be exercised in starting and stopping the swing. Damage from this source is amply forestalled in the shovel used in this operation by the installation of a friction clutch on the swinging engine.

Stripping over old workings, if care is exercised, presents no particular difficulty. One will usually find that it will be cheaper to operate over and through the old workings than to disrupt the entire system of operation in an attempt to avoid or work around a small minded-out area.

#### Breakers Use Large Quantities of Water\*

BY D. C. ASHMEAD†  
Kingston, Pa.

**A**N ABUNDANCE of water must be supplied for the wet preparation of anthracite. Where anthracite is prepared, in general, by dry methods, water must nevertheless be used, for it is needed in the preparation of the finer sizes. The average quantity of water used in preparation by wet methods in the Wyoming Valley per ton of daily output is 1.035 gallons per minute. Thus, if a breaker has an output of 1,000 tons per day it will require 1,035 gallons of water per minute. A combination wet-and-dry method of preparation requires 0.634 gallon per minute per ton of daily output. The dry method requires only 0.626 gallon per minute.

In the Lehigh region the wet method of preparation requires 1.428 gallons per minute of water per ton of daily output, and the combination wet-and-dry method of preparation requires 0.692 gallon per minute per ton of output per day. In the Lower field the wet method requires 1.542 gallons per ton of daily output and the wet-and-dry combination method requires 1.23 gallons per ton of output per day. The quantity of water required depends on mining conditions. Steep-pitching measures produce a coal that demands more water in its cleaning than does the flat-measure coal produced in the Wyoming Valley field.

Not only is much water necessary but its quality is important. Ordinary mine water is much too high in sulphur to be employed, as it will corrode the chute linings excessively. Consequently anthracite companies endeavor to obtain either pure water or such as is contaminated with as little sulphuric acid as possible.

\*From "Advances in the Preparation of Anthracite," a paper presented at the Wilkes-Barre meeting of the American Institute of Mining and Metallurgical Engineers.  
†Anthracite editor, *Coal Age*.

## By Rolling Coal-Cutter Bits in a Die They Are Forged Or Sharpened to Uniform Length and Outline

**A Machine Cuts as Well as Its Bits Will Let It—An Incompetent Blacksmith Makes an Inefficient Coal Cutter—Proper Angle, Clearance and Length of Cutting Point Should Be Carefully Adjusted**

**C**OAL-MINING machines have been continuously improved during the past twenty years until in point of both efficiency and convenience they have reached a high standard. The bits, however—which do the actual cutting—have remained, until lately, practically unaltered and but little attention has been given to bettering or improving them.

While manufacturers of mining machines have made some efforts to furnish their customers with bits of proper angle, clearance and uniformity, the resharpening of these parts as well as the making of new ones, has been left to the mine blacksmith shop. A power hammer and a pair of hand tongs are the best equipment in general use for this purpose. The result is that bits are too often neither of proper shape, angle, clearance or length of cutting point, and no two are alike.

### A FEW BITS MADE TO DO ALL THE CUTTING

When such bits are put in the machine, even if a conscientious attempt is made to gage them, the result is obvious. Some lose their gage or clearance quicker than others, thus throwing undue work onto those remaining. On the other hand, a few bits, projecting beyond the rest, do more work than they should, and dull more quickly, so that the cutter chain seldom operates at its greatest efficiency and the bits must be reset much more frequently than otherwise would be necessary. Higher power consumption, severe fluctuations in load, undue stress on the chain and machine, a reduced output and an increased labor cost are the results of improperly made cutter bits.

For several years the engineers of the Sullivan Machinery Co. have been studying this problem in an effort to provide a machine that would not only forge bits rapidly but would make them of proper shape and with exact uniformity. After numerous experiments such a machine has been produced and placed on the market.

### BITS ARE ROLLED, NOT HAMMERED, TO SHAPE

As shown in the accompanying illustration, this machine consists of a rectangular frame of convenient width and height, set on four legs. At one side is attached a heavy driving pulley to the shaft of which is fastened an oscillating ram. Rolling action has been substituted for the ordinary hammer blow in this machine. The forming die consists of a heavy roller having a slot in its center of proper shape to make either pick-pointed or chisel-pointed bits. Separate roller dies are provided for each of these two forms.

At the forward end of the machine is placed a thick stop or anvil block having an angle corresponding to that which it is desired to give the bit. The bar or blank of heated steel is dropped into the slot just behind this stop; the actuating lever, which is controlled by a foot treadle, is then pressed, whereupon the ram and roller reciprocate, the latter passing over the upper end

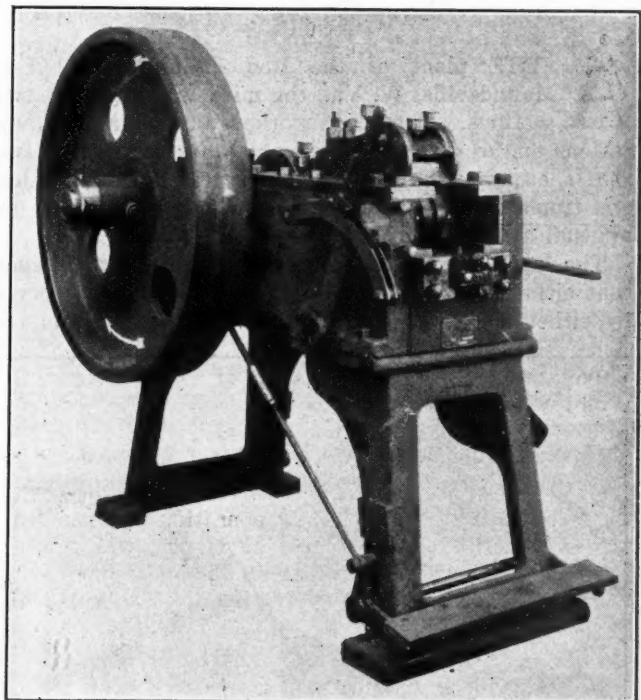
of the steel, first bending and then forming it into proper shape against the anvil block or stop.

The machine runs at from seventy to eighty strokes per minute and five to six passes of the roller are sufficient to complete a new bit. The operator places the blanks or the old bits, as the case may be, one at a time as they come from the furnace in the slot, and when the sharpening or forming operation is completed manipulation of the hand lever at the right side of the machine moves the shift plate and the completed bit with it to the right, where the bit falls into the discharge chute and slides out of the machine.

### READJUSTING THE LENGTHS OF OLD BITS

In resharpening, some old bits will be found to be longer than others. Adjustment for length, in order to maintain cutting points of the proper dimension and taper, is made by the vertical hand lever and ratchet or quadrant at the left side of the machine. This elevates or lowers the wedge or base plate underneath the slot. The position of the bit in the sharpening slot is the same as it would be in the cutter chain of the mining machine.

The shape of the bits made by this machine is that which experience has shown to be most efficient. The



**MACHINE FOR MAKING UNIFORM BITS**

Four qualities are needed in the making of bits—accuracy in shape and size, speed in operation, and proper temper. For this, much skill is demanded of the blacksmith, but even with this skill he makes a bit that is in many ways defective and he does it at the expense of an excessive amount of time. This machine meets the first three demands. It makes bits of standard shape, accurate outline and five to sixteen bits to the minute. After all, the bit is the real coal cutter and should be as carefully made as the machine which is to use it.

angle of the cutting point with the stock is absolutely uniform, as is also the length of the point. Clearance at the back of the bit is ample, while at the same time the shape is such as to support the point, obviating unduly rapid wear.

As stated above, from five to six passes of the roller are required to form a new bit; from one to three passes are all that are needed to resharpen one that is worn, the actual number depending on the condition of the point. From five to eight bits can be made on this machine in one minute and from seven to ten old ones can be resharpened in the same period without either abusing the machine or slighting the work. With a conveniently arranged heating furnace as high as eighty old bits have been resharpened on this machine in five minutes.

It is asserted by the makers of this sharpener (1) that with it more bits can be made or resharpened in a given time than with the ordinary belted hammer, (2) that the bits so made are uniform, identical and perfect in shape, obtaining the following advantages: (a) A reduction in the power necessary for operating the mining machine, this economy being as high as 25 per cent in some cases. This includes not only the power saved when the bits do not drag in the coal, but the saving that is effected through a reduction in the pull

required to move the machine across the face. (b) As the machine requires less power to cut the coal with suitably sharpened bits, less repairs naturally will be necessary. The saving on repairs may be estimated at from 10 to 15 per cent. (c) A set of bits made on this sharpener will cut more square feet of coal than will bits sharpened in the ordinary manner, because of the proper shaping and clearance which they embody. This means an appreciable saving in the amount of time required to cut a given number of places; in other words, it signifies more tonnage per day from the machine.

As illustrating this last consideration a report from a certain mine in Illinois states that as high as five places have been cut with one set of bits of the new pattern, as compared with two places when the old style of bits was employed.

The primary object sought in the design and development of this machine was not so much to enable a purchaser to make or resharpen bits rapidly and cheaply as to provide a much needed element of insurance for coal cutters. It is the intention also to reduce maintenance cost by decreasing the wear and tear on the cutter chain and thus on the machine itself, and to effect a reduction in the power consumed in cutting coal through the employment of suitable cutter bits.

## Two Independent Shafts, Which Serve Two Distinct But Connected Mines, Dump Coal Over One Tipple

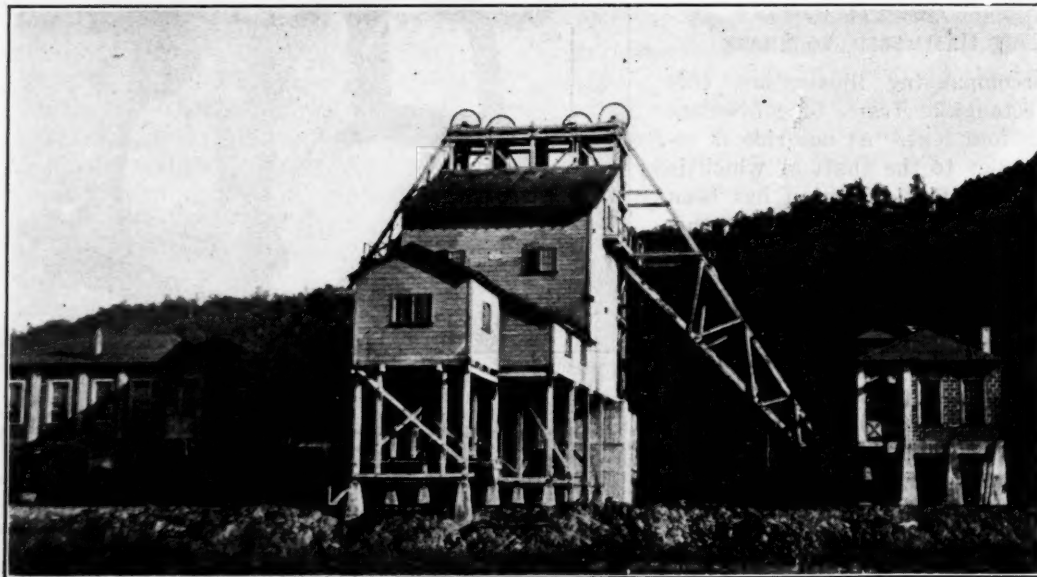
Coal May Be Brought from Either Mine to Either One of Two Shafts — Each Mine Has Separate Organization — Shafts Walled Ten Feet Above Surface Against Floods — Hoist Twenty Feet From Ground

**A**T THE plant of the Ben Franklin Coal Co., Moundsville, W. Va., the mine is laid out in two sections. These are worked by separate organizations and as distinct mines which are reached by two shafts, each having two compartments. Yet there is but one tipple for these two mines, which is certainly an unusual arrangement.

The layout at the bottom of the two shafts is such that either or both sections of the mine can be served by either shaft. There are two beds of coal and the

same arrangement can be used in either bed. The total hoisting distance is now 270 ft., of which 200 ft. is the depth below the surface, and the balance, or 70 ft., is the height from the ground to the dumping point. Each hoist is designed for a capacity of 2,400 tons in eight hours, and the tipple is built to handle this output. Self-dumping cages operating in balance are employed. Each car holds approximately 4,000 lb. of coal.

Each hoist has a rope speed of 1,250 ft. per minute. These machines, which are of Lidgerwood manufacture,

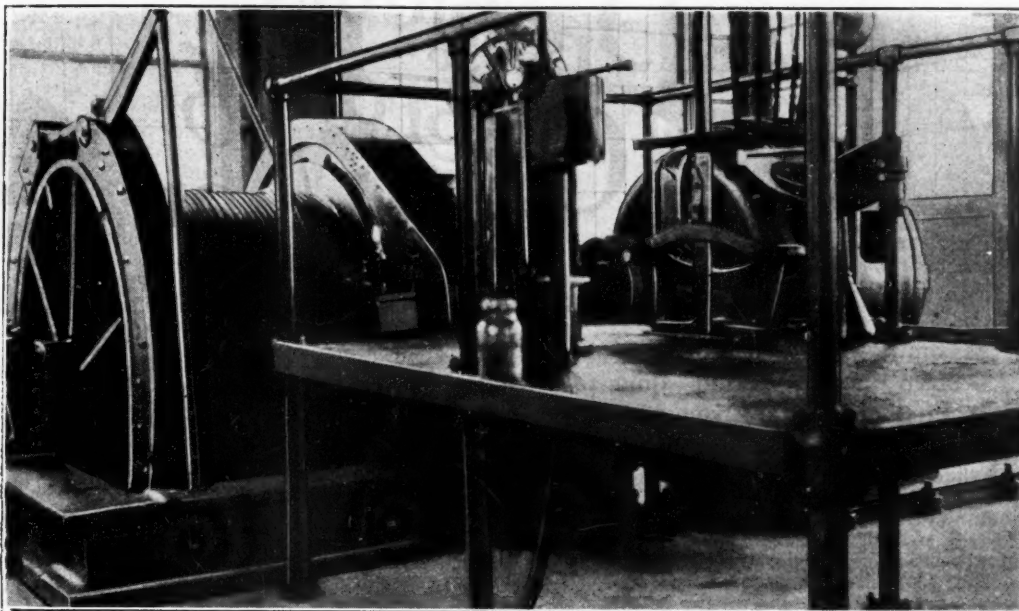


### Double Headframe

To meet the difficulty of hoisting a large tonnage where small 2-ton capacity cars are used one may have cages for two cars or a multiple deck cage or more than one hoisting shaft. At the Ben Franklin Coal Co.'s mine at Moundsville, W. Va., twin shafts and duplicate hoists meet the problem in the last, and least usual, way.

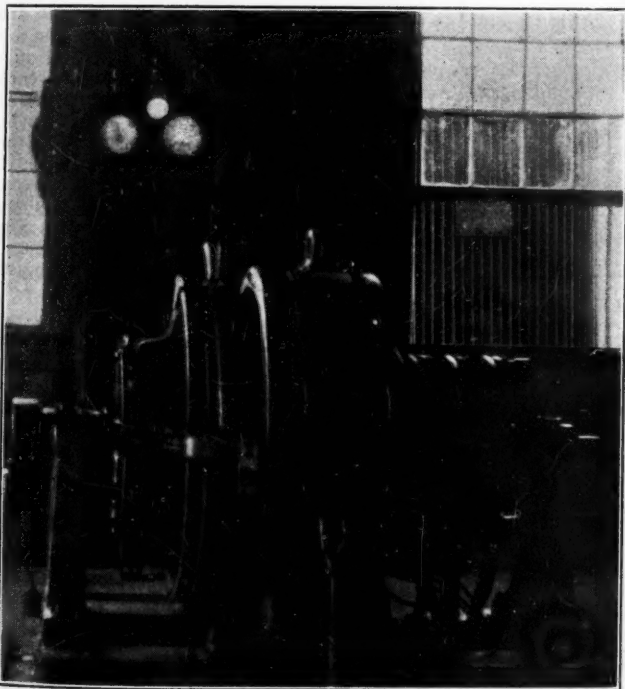
### One of the Hoists

Lift is only 270 ft. from mine landing to dumping point. Drums are 5 ft. in diameter, driven through flexible couplings and single-reduction cut-steel herringbone gears by 350-hp. 40-deg. motors. A safety device prevents overwinding and overspeeding, and the control device is of full magnetic contactor type. Protection is provided in case the power fails or too great a demand is made on the power.



are driven through Francke flexible couplings and single-reduction cut-steel herringbone gears by 350-hp. Westinghouse 40-deg.-rise motors. The hoisting drums are 60 in. in diameter and each machine is equipped with a Welch safety device for the prevention of overwinding and overspeeding. A ground stop for use when hoisting men also is provided.

Control equipment, with which each motor is fitted, is of full magnetic-contactor type, providing either manual or automatic acceleration. Protective devices also are installed, providing for failure in power supply and overloading. The operative's platform is raised above the floor of the hoist house and is placed directly behind the hoist drum. Upon it are mounted all control equipment and other devices necessary to comply with the mining laws and compensation rules.



ROTARY CONVERTS ALTERNATING CENTRAL-STATION CURRENT TO DIRECT

Current is received at 2,200 volts, three phase, 60 cycles and is converted to direct current at 250 volts by the 150-kw. rotary converter shown in the illustration.

The plant is situated near the bank of the Ohio River, which usually overflows in the spring, inundating the low ground by which the tippie is surrounded. To prevent flooding of the shafts their four concrete walls, each 3 ft. thick, are carried up to a point 10 ft. above the level of the railroad tracks. The hoist houses also are elevated on concrete columns 19 ft. high. This raises the hoists and other machinery well above the highest known water mark.

Designed by Jacobsen & Schraeder, Inc., the tippie machinery is so arranged that the following sizes of coal can be produced: Slack, mine-run, 1½-in. lump, 3-in. lump, 1½-in. nut and 3-in. nut.

Alternating current for the operation of the hoists and tippie machinery is received at 2,200 volts, three-phase, 60 cycles. For use underground it is converted to direct current at 250 volts, the 150-kw. rotary converter shown in one of the accompanying illustrations being used for this purpose. This machine is located in a room in the rear of that containing one of the hoists.

### Test of Turbine Blades of Stainless Steel

STAINLESS steel is not a material merely for making pocket knives and table cutlery. It is an industrial alloy which will compare in importance, it is believed, with manganese, nickel, chrome and other steels.

Thomas Firth & Sons, at their Tinsley factory, in Yorkshire, England, recently fitted several experimental blades in a Westinghouse turbo-generator set of 2,000 kw. running at 3,000 r.p.m. The temperature of the steam with superheat averages about 600 deg. F.

Nine experimental stainless steel blades, some polished and some unpolished, were fitted in the low-pressure end of the turbine on June 11, 1920, and alongside them were placed for comparison three new nickel-steel blades supplied by the makers. The latter were of 5-per cent nickel steel. At the high pressure end eighteen stainless steel blades were placed, some polished and some unpolished, and three standard blades. After a run of 3,471 hours the turbine was opened and it was found that whereas the standard blades had corroded in the usual way the stainless ones, both polished and unpolished, were practically untouched and retained their original brightness.



# Problems of Operating Men

Edited by  
James T. Beard



## Working a Vertical Seam of Coal

Maximum Recovery at Minimum Cost Determines Choice of Method  
—Steep Pitch to Vertical Minimizes Roof Pressure—Chutes Driven on Pitch of 45 Deg. Above Airway—Pillars Drawn Back in Benches

**ALLOW** me to suggest, for the consideration of readers, another solution of the problem presented in the inquiry of a mining engineer, *Coal Age*, Nov. 3, p. 726, relative to the working of a vertical coal seam.

The proposition presented is somewhat an unusual one and it may be that the plan I have in mind for working such a seam will prove of interest, in connection with the method already described in the reply to this inquiry. The seam is said to be a friable lignite, from 10 to 15 ft. in thickness and having a good hanging wall, but the footwall is poor and spalls off badly.

In mining coal, the choice of method to be employed must be determined by considering the plan that will produce a maximum recovery, at a minimum cost per ton, and yield a product in good marketable condition, always having in view a maximum degree of safety for the workmen.

In this selection, the factors influencing the choice of a method are the

Owing to the friable character of the coal, the steep pitch and the thickness of the seam, the pillar method of mining is the most logical to employ. Also, it being desirable to produce a maximum percentage of lump coal, the excessive use of powder should be avoided, and the loading and haulage of the coal should be performed in a manner to avoid breakage, as much as possible.

The sketch presented in this inquiry (p. 726) showed the first level, 100 ft. below the surface, reached by a rock slope and tunnel; while the second level, 100 ft. below the first, was reached by a shaft and tunnel. Assuming this to be the case, and starting from the lower tunnel where it cuts the seam, a main gangway 7 x 7 ft. should be driven to the right and left of the tunnel, close to the footwall and continued to the property lines.

As indicated in the figure, crosscut chutes are driven up, on a steep pitch, to the hanging wall, a distance of 20 ft., where an airway 5 x 6 ft. is then

to the first level above, a distance of something over 100 ft. measured on the pitch.

When five or more of these chutes have been driven through to the first level, the work of robbing the pillars in this panel or block is commenced. In mining parlance, this is done by "slabbing" back the rib of the chute. The same process is continued in steps or benches, as indicated in the figure, till the footwall is reached.

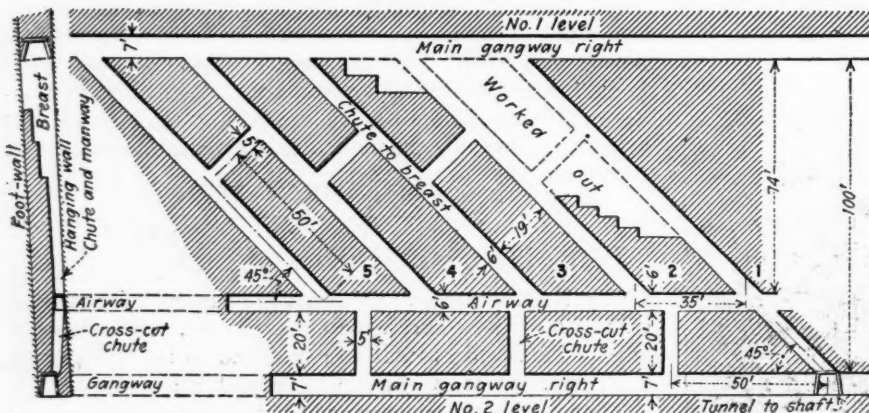
The work of robbing is started on the upper end of the outby pillar and progresses inby. When properly conducted, this method will permit of an arrangement whereby the coal will run from the breast and be delivered to the main chute; or the coal in each breast can be sent down a trough, erected in its own chute, and passed through a cross-chute between the airway and main gangway, where it is loaded into the mine cars.

By careful arrangement, it is possible to keep the main chute full of coal and, at the same time, give each breast an opportunity to send out coal continuously. The plan requires but little timber as all haulage roads, airways and chutes are driven in the coal, except where the footwall or hanging wall forms a rib of the opening.

It is needless to say that the extraction should proceed as rapidly as possible, in order to avoid trouble from caves and settlement, due to the disintegrating effect of the air on the strata. In respect to ventilation, the best plan is to pursue the usual one of conducting the air first to the inside workings, by means of an air-course, forming the back entry of each haulage road. From that point it is carried along the faces of the breasts, passing through the crosscuts in the chute pillars, which were made 50 ft. apart when the chutes were driven. Where no gas is present, the haulage road is generally made the return airway.

H. B. MILLER,

Mining Engineer & Geologist.  
Pittsburgh, Pa.



VERTICAL SECTION AND PLAN OF MINE PROJECTED ON VERTICAL PLANE

roof pressure, strength and character of roof, floor and coal, inclination and thickness of seam, equipment available and output desired. Without a knowledge of the local conditions, it is practically impossible to make an absolute choice of a method that will, with certainty, yield the best results. It is quite evident that numerous details may considerably modify the choice.

It is practicable, however, to view the proposition of working a vertical seam in a general way and, without being familiar with the local conditions in this case, it is in the spirit of helpfulness that I am presenting the following suggestions, accompanied by a sketch that I hope will be clear.

driven to the right and left along the hanging wall and parallel to the gangway 20 ft. below.

The development is now ready for working out the coal above the airway and, for that purpose, my plan is to drive narrow chutes, say 5 x 6 ft., in section, up from the airway, at an angle of 45 deg. and close to the hanging wall. These chutes are driven on 35 ft. centers, which will leave pillars about 19 ft. thick between them.

As shown in the figure, I would locate one main chute starting from the tunnel, where much of the coal will be loaded into the cars in the later progress of the work. As the development proceeds, each chute is driven up

## Mining Coal at Sydney, N. S.

*Unjust criticism of coal-mining equipment at Sydney—Many Operations of Cape Breton the most up-to-date on the Continent—Difficulties encountered peculiar to the district—Must be studied on the ground.*

**I**N a recent editorial appearing in *Coal Age*, Sept. 1, p. 325, entitled "An International Issue," much injustice was done to the mining of coal in Cape Breton. As the writer states, he is taking a "long-distance view" of a Canadian problem.

In common justice to the coal mining of this district, it is only fair to assume that the editorial writer is wholly unfamiliar with affairs in Cape Breton. Either that, or he took this

course for the purpose of getting under some person's skin and spurring him to defend our "Jubilee Bankhead," to which his remarks particularly refer, but of which we are justly proud.

The readers of *Coal Age* will be interested to know that we are operating, here in Cape Breton, mines of almost all description, ranging from the most up-to-date equipment with tumbling cages that hoist 5,000 tons in eight hours, to a little slope mine, opened last year, and equipped with a pole bankhead cut from the clearing on which the mine was sunk.

The larger mine, first mentioned, cost for shaft and bankhead over \$1,000,000, when started about 15 years ago. The little slope mine mentioned is now producing 500 tons of coal, per day, and its total cost for bankhead and equipment was under \$75,000. It is interesting to note, in passing, that the cost of production, per ton, is less at this mine than at the larger operation.

The problem of mining coal in Cape Breton is a big one, and we desire all the assistance possible in its solution. Every mine, here, presents its own peculiar difficulties, which must be studied on the ground. As is well known, these operations are submarine and in danger from water and gas.

#### MINING COAL UNDER THE SEA

The ventilation of workings four miles out under the sea is of itself a man-sized problem. The roof ranges from bad to worse. While the longwall method of mining can be successfully employed in some places, other undertakings can be worked only on the "board-and-pillar" plan. The coal is very fragile and requires most careful handling, as the market demand is for large coal.

Under these conditions, it can be readily understood that the mining of this coal is no simple trick. Every fall the coal gets, in passing from the face to the consumer, means another gray hair in the sales agent's head, and a few cents less in the pockets of the shareholders. The handling of the product is made more difficult by the fact that the government coal-mine inspectors of Nova Scotia do not approve of a screening plant within 200 ft. of a downcast shaft.

The editorial, previously mentioned, commented on the size of our Jubilee 1-ton tubs, expressing the thought that they should be larger. In reply, let me say that we are using 2- and 4-ton tubs in some of our 7- and 9-ft. seams. But, I would ask the writer if he thinks he could remain close friends with a 4-ft. 2-in. Jubilee pit pony, by expecting him to haul a 2-ton box up an 8 per cent headway. I do not have to tell the editorial writer that, to use a larger horse in this thin seam, would mean extensive brushing of the roof, which would be prohibitive.

At Jubilee Colliery, we have the last word in electric hoists, built by the Vulcan Iron Works, this year, and equipped with every modern safety appliance. At the Princess, a pair of 36 x 60-in. engines, direct connected to an 18-ft. drum, hoists the coal up a 700-ft. shaft. This engine was built in England, in 1867, and has been in continuous operation ever since. Several of our collieries are equipped with self-dumping cages. At one of these, 8-ton, self-dumping skips are hoisting 5,000 tons of coal in eight hours.

May I ask, in conclusion, Is it any wonder that we are proud of our Jubilee Bankhead, which every one down East seems to feel has reached the topnotch in mine equipment?

For a period of years, in the past, our engineers have visited the principal coal mines, in the United States and Europe, and what we have are the results of their investigations. The company is now contemplating another Jubilee Bankhead, for a new mine.

Sydney Mines, N. S. M. DWYER.

#### Causes of Loss in Power Transmission

*Small conductors cause large drop in voltage—Heating effect not important factor in mining practice—Poor joints in conductor the chief source of trouble—Different forms of joints used in wiring.*

IN a brief article that appeared in *Coal Age*, July 7, p. 12, W. L. Murray draws attention to the heating effect that results when a conductor is overloaded or its current-carrying capacity exceeded.

In urging the selection of a wire of suitable size, the writer deals with the subject almost wholly from a standpoint of heating effect, stating that the wire may become red or white hot or even melt.

In mining practice, however, the chief trouble arises from choosing too small a wire for the transmission of power, which increases the resistance and causes the loss of voltage. The heating effect is not an important factor.

#### SMALL CONDUCTORS INCREASE LINEDROP

My experience proves to me that the electrical conductors installed in coal mines are, as a rule, large enough to carry the required current without heating the wire to any serious degree. But, considered from the standpoint of efficient operation, these conductors, are very frequently far too small and cause a loss of voltage that is a great hindrance in the operation of the machines and motors in the mine.

Occasionally, I have found this loss to run up as high as 50 per cent. Such a condition is readily explained by the fact that when the mine was first opened the distance, from the power house to the point in the mine where the power was used, was comparatively small. Later, as the mine was developed, that distance greatly increased.

As is well known, the loss in voltage or line drop increases with the resistance, which is proportional to the length of the conductor, for the same size of wire. It is easy to see that a wire that will carry a given current a few hundred feet with a low linedrop, would be incapable of carrying the same current several thousand feet into the mine, without a great loss in voltage.

Again, as electric power is the product of the voltage, in volts, and the current, in amperes, it is clear that any loss of voltage, in transmission, represents a loss in the power available for operating the machines. That means an increased ratio between the power generated and that utilized in the mine, or a loss in efficiency.

Another source of trouble that often causes an extensive voltage loss, in power transmission in mines, is poor or improperly made joints in the wire conductor. In some instances, I have

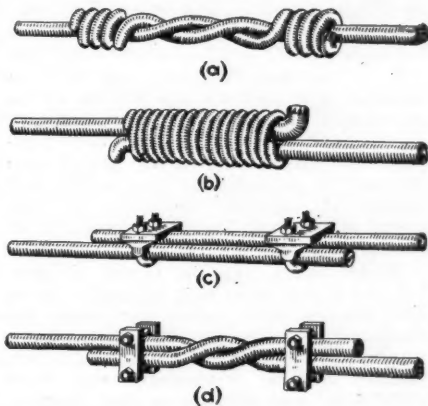
found a poor joint to have caused a resistance equivalent to a hundred feet or more of wire. This may seem overstated, but it is a fact that emphasizes the need of making good joints wherever these are required.

#### FOUR FORMS OF JOINT RECOMMENDED AS MOST EFFICIENT

In the accompanying figure, I am showing four forms of joining the ends of two wires, any one of which will reduce the resistance offered by the joints to an approximate minimum. While each of these have, more or less, a particular adaptation that makes the choice of one or the other preferable, they all require that the two wires be well soldered together.

The first form shown at (a) is that known as the twisted or Western Union joint. In making this joint, the ends of the wires are first thoroughly cleaned with a file and sandpaper. The central portion must be twisted, as shown in the figure, which gives a better opportunity to solder the wires and make a complete joint.

This joint is excellent for permanent work. Its strength and electrical con-



JOINING ELECTRIC CONDUCTORS

ductivity can hardly be improved. It is, however, a hard joint to make, in the larger sizes of wire, because of the difficulty of twisting the two loose ends tightly around the conductor.

The second form of joint shown at (b) is more quickly made, but has not the strength of the preceding one, as the two wires are liable to pull apart under a severe strain. As before, the two wires are thoroughly cleaned and a sharp bend made at the end of each. They are made to lap about 4 in. and firmly soldered together, after which the joint is wrapped closely with a smaller wire that has first been cleaned; and again the whole is well soldered.

In the third form of joint shown at (c), the wires having been thoroughly cleaned are lapped about 8 in. and clamped together with two wire-rope clamps, after which the space between the clamps is well soldered. This is a good joint for temporary work, as it can be taken apart easily without loss of copper.

The last or fourth form of joint, shown at (d), is another twisted joint where the two loose ends are secured by a simple clamp, as shown in the figure. Here, also, the space between the clamps is well soldered to insure the wires having a good contact. This is a good joint for any class of work.

Hillside, Ky.

F. C. SINBACK.

### Physical Examination of Miners

*Physical defects should debar men from employment in mines. Color-blindness, deafness, and other defects render men unsafe as mine employees—Physical examination an important requirement.*

THE question asked by an inquirer in *Coal Age*, Sept. 29, p. 497, as to whether a man who lacks the sense of smell, would make a safe mine official, brings up a point that has long been in my thoughts and which I believe deserves the earnest consideration of mining men who are desirous of increasing the safety of mining.

The reply to this inquiry stated concisely and clearly that a man whose faculty of smelling is impaired is not fit to act in an official capacity in a mine and, further, such a lack would be sufficient reason for withholding from him a certificate of competency.

Although the sense of smell is the only faculty referred to, here, that would debar men from holding an official position in a mine, there are many other possible imperfections in men that not only unfit them for serving in an official capacity, but make their employment in any capacity underground a menace to the lives of all in the mine.

It is not too much to say that to employ such men as are known to be physically deficient, in any manner whatsoever, is to defeat the very purpose of our mining laws, which are enacted to provide for the health and safety of persons employed in and about the mines for the protection of property.

Many years ago, in Great Britain, I heard a man who was lectioneering in the interest of a labor candidate for Parliament make the statement, in a mining community, that he knew personally several firebosses who were color-blind and serving in that district.

He stated they could not discern a gas cap on a safety lamp, intending this to serve as a plank in the platform of the candidate for whom he was speaking. The statement was not without effect. The British mine law has since been amended and the certification of firebosses now includes a rigid color test of the eyes of all candidates.

That color-blindness is more common than is generally supposed is shown by the compulsory test of the eyes of seamen and railroad men. A medical examiner, acting for a large company, recently stated that out of 900 seamen whose eyes he had examined, about 2 per cent were unable to discern different colors and had to be rejected for service.

Good hearing is also an important faculty and should be possessed by all underground workers, whether mine officials, daymen or miners. Not infrequently it has happened that a man partially or wholly deaf has been caught and injured or killed, on a haulage road, because he did not hear the shout of the driver or the alarm of an approaching trip.

Strange as it may seem, there is a case on record, in a state where I formerly worked, showing the employment of a totally blind man who worked in that condition, for several years at the coal face. The unfortunate man had lost his sight by going back on a shot that failed. Later, out of sym-

pathy for him and his family, he was permitted to continue his work as a miner. Mine foremen should remember, however, that it is no act of kindness to permit a man to endanger his own life and the lives of others, in work for which he is unfit.

In my experience, I have known of the employment of men in mines who were mentally irresponsible. I recall one case of a man subject to epileptic fits being taken suddenly when hoisted on a cage with seven other men, in a 900-ft. shaft. Fortunately, the men were on the alert and caught and held the fellow till the cage reached the surface, thereby avoiding an accident.

At another time, I worked with a buddy who was subject to these fits. This man was taken with a fit while traveling an airway and fell where his path crossed the main haulage road at the foot of an incline. It was only the prompt action of a fellow worker who rushed to a refuge hole and wrecked an oncoming car, with a prop taken from the hole, that saved the lives of the man and those trying to rescue him.

Many instances could be mentioned of deaf mutes, peg-legs and other

cripples employed underground. One man, I remember, had both arms cut off at the elbows. All of which I have known in my own experience in mines. Surely, a coal mine is no place for such.

As far as my knowledge goes, none of our state mining laws require a physical examination of candidates for certificates of competency. To my mind, this is an important omission. It would seem absurd for a board of examiners to put their official sanction on a man who may be able to perform the duties, required of him by law, only in pantomime.

In my opinion, the law should require all state examining boards to examine candidates as to their physical fitness to perform their duties. The means of making such physical examination should be placed at the disposal of the board. No candidate who would fail to pass the physical test should be granted a certificate. Such physical tests are being instituted by some companies already, I am glad to say, and their efforts in this direction are commendable.

JOHN WALLS, SR.  
Bayview, Ala.

## Inquiries Of General Interest

### Facts About the Carbide Lamp

Large Percentage of Carbide Lamps in Use, in Mines, Calls for Heavy Consumption of Carbide—Estimate of Number of Lamps in Use Based on Reported Consumption of Carbide, Per Ton of Coal Mined

I WISH to obtain what information is available regarding the use of the carbide lamp in coal mining. Is it possible to give any accurate figures on the number of these lamps now in use in mines, in this country, and the amount of carbide consumed by them? Facts bearing on this matter, if available, will be greatly appreciated.

SUPER.

—, Ill.

It is obvious that it would be practically impossible to give accurate figures regarding the number of carbide lamps in use, in the coal mines of this country, as no reliable data of that kind are available. However, owing to the evident large number of these lamps in use, as indicated by the prodigious consumption of carbide, the matter is of much importance statistically and we have made earnest efforts to secure information on which to base an approximate estimate.

The latest reliable statistics (1918) published by the Federal Bureau of Mines, shows a total of 762,426 men employed in coal mining. Of this number, 597,923 or 78 per cent, work underground.

Careful inquiry of manufacturers shows that, approximately, there are 150,000 Edison electric cap lamps and about 10,000 of all other types of electric lamps in use, in the mines, together with 25,000 flame safety lamps and 5,000 oil torches.

This makes a total of 190,000 of all kinds of lamps other than carbide lamps in use by, say 598,000 miners. Taking this as a fair estimate, it is logical to assume that of the 598,000 miners, in our coal mines, over 400,000 are using the carbide light.

These figures show the immense popularity of the carbide lamp, gained in the few years since its introduction into the mines. It also explains the rapidly growing consumption of carbide in recent years. It is stated in "Mine Gases and Ventilation," page 309, "A charge of 2½ ounces of carbide will supply gas sufficient to maintain a flame 1½ inches in length during a half-shift or more; but then it will be necessary to recharge the lamp."

This would mean a daily consumption of five ounces of carbide, by each miner using that lamp. Statistics show the average production of coal, per man, as between three and four tons per day. The consumption of carbide based on this estimate is, therefore, 1 lb. of carbide for every 10 tons of coal mined.

Correspondence with a number of large coal companies in different states, using the carbide lamp, exclusively, shows a total of 202.6 tons of carbide consumed in the production of 4,198,279 tons of coal; or  $4,198,279 \div (202.6 \times 2,000) = 10.3$  tons of coal mined, per pound of carbide consumed. We believe these figures are a close approximation to the actual facts.

## Examination Questions Answered

### Miscellaneous Questions

(Answered by Request)

**QUESTION**—What are the advantages of driving rooms and entries on sights, and how would you drive to keep rooms straight without sights?

**ANSWER**—The advantage of driving rooms on sights is that they are kept straight and there is no danger of their running into each other. The pillars separating the rooms are kept at a uniform width and the danger of squeeze or creep is avoided. The work of drawing back the pillars is then performed with greater safety and there is less loss of coal than where the pillars are of variable thickness. Under these conditions, there is less roof trouble in the first working, or when robbing, and fewer accidents are liable to occur.

The best method of keeping the rooms straight without sights is to sight along the rail, while keeping the track straight and at a uniform distance from the straight rib of the room.

**QUESTION**—What effect does pitch of seam have on ventilation?

**ANSWER**—The pitch of a seam affords an opportunity for air columns to form, which may either assist or retard the circulation of the air, according to the relative temperatures of the air on the intake and return sides. In a mine generating marsh gas or methane, the gas being lighter than air, tends to accumulate at the face of the pitch workings and is often difficult to remove. On the other hand, if the mine is generating blackdamp, this gas being heavier than air, tends to accumulate in the dip workings and is likewise difficult to remove.

**QUESTION**—Which is the most evenly ventilated, a flat or an inclined seam?

**ANSWER**—A generally flat seam is capable of more uniform or even ventilation than an inclined seam, because there is no opportunity for air columns to form in different parts of the working, which would change the ventilation by assisting or retarding the air current, at different points in the mine.

**QUESTION**—What effect does the amount of moisture carried in the air have upon the mine?

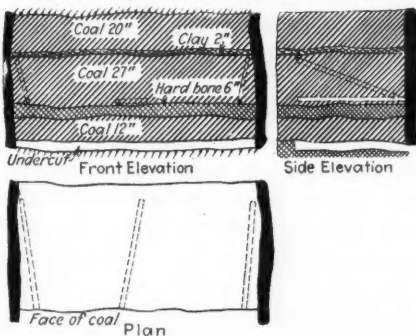
**ANSWER**—The amount of moisture in the air is not material, in respect to its effect on the mine, but rather the degree of humidity of the air. For example, an air current of 60 per cent humidity, at a temperature of 70 deg. F., will carry twice the amount of moisture, volume for volume, as air of the same humidity, at 50 deg. F., and yet have no greater effect on the mine, in respect to making the air dry or wet. The effect produced in a mine by the moisture carried in the air increases and decreases with its degree of humidity and the relative temperatures of the outside and inside air.

**QUESTION**—In a mine worked by safety lamps, the seam is a hard coal having the following section: Coal 1

ft. 8 in.; clay 2 in.; coal 2 ft. 3 in.; hard bone 6 in.; coal 12 in. An entry driven 9 ft. wide is undermined, below the 12 in. of coal, to a depth of 5 ft. What instructions would you give your shotfirers, both for safety and economy in blasting the coal? Show by sketch, in plan and section, the location of the shots, stating which shot should be fired first and giving your reason.

**ANSWER**—The shotfirers should be given instructions to make a careful test for gas in each place before firing a shot and to fire no shots that, in their judgment, are unsafe. Only one shot should be fired at a time in this heading. Time should be given for the air current to sweep away the gas and smoke, before firing another shot.

As indicated in the figure, one shot is first placed a little to one side of the center of the heading and just above the



hard bone. The hole for this shot should be drilled level and extend to within three or four inches of the depth of the cutting. The position of the hole should be such that the charge will be located about in the center of the heading, the hole being started a little to one side and inclined toward the center, as shown in the plan. This shot should be expected to break down the hard bone and the 12 in. of coal beneath it. It will also break the coal above and give opportunity for the two rib shots, fired later, to perform their work. As shown in the figure, the rib shots are each started about 8 or 10 in. from either rib and the holes inclined upward and toward the rib, so that each charge will be located quite close to the rib side.

**QUESTION**—How may an even amount of moisture be maintained in the air?

**ANSWER**—The amount of moisture carried in an air current will remain constant in its passage through the mine when the conditions are such that the air is saturated at the temperature of the mine. It will then neither deposit or absorb moisture.

**QUESTION**—Which would produce the most poisonous afterdamp, an explosion of dust in a non-gaseous mine, or an explosion of gas in a gassy mine?

**ANSWER**—Much will depend on the amount of air in the workings; but, in general, it can be stated that an ex-

plosion of dust will produce more carbon monoxide (CO), which will render the resulting afterdamp more poisonous than an explosion of methane or marsh gas (CH<sub>4</sub>), under like conditions with respect to the air.

**QUESTION**—An airway 7 x 10 ft., in section, is passing 35,000 cu.ft. of air per minute, under a water gage of  $\frac{3}{4}$  in. It is desired to reduce this quantity of air by means of a regulator, so that the airway will pass but 21,000 cu.ft., under the same water gage. What should be the area of opening in the regulator?

**ANSWER**—In order to calculate the area of opening in a regulator, such that it will pass a given quantity of air under a given water gage, it is necessary to know the natural pressure or water gage due to the reduced quantity of air that will then be passing in the airway. In this case, we assume that the original water gage ( $\frac{3}{4}$  in.) remains unchanged, in front of the regulator, and calculate the natural gage due to the reduced circulation, remembering that the pressure or water gage varies as the square of the quantity of air passing. In other words, the gage ratio is equal to the square of the quantity ratio. Therefore, calling the natural water gage, due to friction when the airway is passing 21,000 cu.ft. instead of 35,000 cu.ft. per min., we have

$$\frac{x}{0.75} = \left(\frac{21}{35}\right)^2 = \left(\frac{3}{5}\right)^2 = 0.36$$

$$x = 0.75 \times 0.36 = 0.27 \text{ in.}$$

Subtracting this natural water gage from the original gage gives the water gage due to the regulator; thus,  $0.75 - 0.27 = 0.48$  in.

Finally, the area of opening in the regulator required to pass 21,000 cu.ft. of air per minute, under a water gage of 0.48 in., is

$$A = \frac{0.0004 \times 21,000}{\sqrt{0.48}} = 12.12 \text{ sq. ft.}$$

**QUESTION**—What effect does temperature have in removing gases from high falls?

**ANSWER**—A higher temperature of the gas accumulated above a fall makes it more difficult to remove, because of its tendency to rise. In such cases it is necessary to employ a stronger air current to sweep the gas from the fall.

**QUESTION**—How do seasonal conditions affect the wetness and dryness of underground roads workings, in coal mines?

**ANSWER**—The cold air of winter, entering the mine and becoming warmed by the higher temperature of the workings, has its capacity for carrying moisture rapidly increased. In other words, the air becomes drier by reason of its higher temperature. It is then in a condition to absorb moisture from the mine workings, which renders the mine dry and dusty, unless means are taken to humidify the intake current by the introduction of steam or otherwise.

On the other hand, the generally warmer air of the summer season, entering a mine and becoming cooled in passing through the underground workings, has its capacity for absorbing moisture much reduced. In other words, the lowering of the temperature of the current, after it enters the mine, renders the air more moist. If the outside air approaches the point of saturation before it enters the mine, the lowering of its temperature may cause moisture to be deposited in the mine.

# The Weather Vane of Industry

News Notes Chronicling the Trend of Industrial Activities on Which Depends the Immediate and Future Market for Coal

**B**USINESS is better and sentiment throughout the country reflects courage, according to a bulletin on business conditions just issued by the National Bank of Commerce in New York. "Such progress as has been made by the business community toward normal conditions," the bulletin continues, "results from a realization that artificial levels of activity will not again be reached in any period near enough to affect the problems of to-day, and from a determination to practice economies of operation more rigid than heretofore thought possible.

"Some part of the recent gain in business is unquestionably a result of seasonal demand. Permanent improvement depends to a large extent on foreign buying power, and even more on the adjustment of conditions under which the farmer operates. The last three years have clearly shown that the European situation can be stabilized only by the political and economic efforts of the countries concerned. Domestic conditions can be bettered by steady determination on the part of corporations and individuals to secure greater efficiency and to practice greater economy. This will result in gradual readjustment of the burden of price inequalities now resting on the farmer.

"In the period immediately ahead, manufacturers will face the most severe competition in a generation. It is now clear that many important industries are seriously overbuilt, when measured in terms of effective demand here and abroad. There is no method by which competition can be avoided, but there are methods by which it can be successfully met. Overhead charges should be rigidly examined and cut to the lowest point consistent with productive efficiency. Costs should be critically studied and such examination should include not only factory operations but the entire producing organizations. In periods of high profits, useless frills are certain to be introduced into the best systems.

"In many lines, labor costs must be further reduced. Such reduction can in part be attained by lower wages and in part by increased efficiency in organization for production. A considerable part of labor inefficiency is at times due to actual defects in plant and organization. Business has two duties: first, to provide the best means for efficient production by its labor, and second, to insist on a day's work for a day's pay."

## Tin Plate Mills Resume Work

Fires have been started in the six furnaces at the Yorkville (Ohio) tin plate plant of the Wheeling Steel Corporation, which had been idle since the latter part of June due to refusal of the company to renew union agreements for its subsidiary companies.

The Newcastle (Pa.) tin plant of the American Sheet Tin Plate Co. resumed in full at midnight Sunday, Nov. 20. The plant had been operating on a five-day a week schedule and with ten of its twenty

mills in operation. The entire twenty mills are now at work on a five-day a week schedule.

The American Sheet & Tin Plate Co. started four additional hot mills last week at the tin plate mill in Farrell, Pa. This placed twenty-four out of the thirty mills in operation. The prospects for steady operation throughout the balance of this year are considered good.

The company also put nine additional hot mills in operation at Vandergrift last week. There are now twenty-one mills running.

## 92,000 Fords Built in October

Final October production figures of the Ford Motor Co. indicate that there were 92,000 automobiles and trucks produced during that month. Of that number approximately 85,000 were turned out at Highland Park and the assembling branches at Kearny, Kansas City, Philadelphia and St. Louis. The remainder were produced in Canada and other foreign plants. The November production is being maintained according to schedule.

## Valve Plant on Full Time

The Chapman Valve Manufacturing Co.'s plant at Springfield, Mass., resumed full time Monday, Nov. 28, with practically a full working force of between 700 and 800 hands. The step is said to be due to improved business conditions. Lately the factory has operated five days a week.

## Industrial Employment Gains

Improvement in business conditions are indicated by the employment reports of the Bureau of Labor Statistics of the Department of Labor. In 10 out of 14 groups of industries there were increases in the number of persons employed in October as compared with September and in 4 decreases. Six of the 14 groups showed increases in the amount of money paid to employees and eight showed decreases. The largest increases in the number of persons on the payroll are shown in car building and repairing, which had a gain of 6.1 per cent, and bituminous coal mining, with a gain of 5.3 per cent. In the automobile industry there was a decrease of 3.9 per cent and in men's ready-made clothing a decrease of 1.9 per cent. The bituminous coal mining industry showed an increase in the amount of money paid employees of 17.3 per cent while the amount paid to workers in the iron and steel industry increased by 15.1 per cent, and that paid in the car building and repairing industry by 12 per cent. There was a decrease of 16.1 per cent in men's ready-made clothing, and a decrease of 10.8 per cent in automobiles. A comparison of the figures of October, 1921, with those for identical establishments for October, 1920, shows that in eight of the 14 industries there were increases in the number of persons employed, while in six industries there were decreases. Six of the 14 industries show an increase in the total amount of the payroll for October, 1921, as compared with October, 1920. The remaining eight industries show decreases in the amount of the payroll. The woolen industry shows the most important increase, 38.3 per cent.

# Consumer Storage Throughout the Country as a Means of Regularizing the Coal Industry

Plan Has Been Shown to Be Feasible in Recent Emergencies  
—Initial Cost Would Be Counterbalanced by Stabilization  
of Price—Benefit to Mine Worker in Regular Work

BY THOMAS ROBSON HAY

THE season of hot weather and vacations does not recommend itself as the time in which to consider the purchase and storage of coal for the cold winter months that are sure to follow. And yet it is this very improvidence and, in a sense, indifference that is the cause of no little suffering and hardship in the cold season and which has as its expression the berating of the coal operator for high prices and of the railroads for delayed shipments, due to traffic congestion.

In the cold winter months, when demand is at the maximum and railroads are congested with traffic and hampered by unfavorable and harassing weather conditions, prices are seemingly unreasonable, but only are they so, as a rule, by comparison with the prices that would be just and reasonable if the industry were regularized. In the summer months the prices obtained usually are too low and in the winter months, by comparison, they are too high. On the other hand it should be noted that the prices received by the coal producer in the mid-season are too low in most cases to allow for a fair return on the investment, and it is in the winter time that the economic law of supply and demand helps to equalize the average annual price received per ton to the point where coal production can be considered a profitable undertaking. But the profits for all mines are not the same. The high-cost mine is just breaking even, with perhaps a small profit. Only the excessive demand enables it to come into the market. But the medium- and low-cost mines may, at the same time, be making comparatively large profits, to average up with their small summer profits or, perhaps, losses.

## MINE WORKER, PUBLIC AND OPERATOR AFFECTED

The three primarily interested parties are the miner, the public and the operator. The miner is interested because his income depends on the continuity of operation of the mines; the operator is interested because his income and profits are dependent not only on the continued operation of the mines, but also on the efficiency and economy with which they are operated; the public, whether industrial or domestic user, is interested from the standpoints of cost and regular delivery. The industrial user, whether employer or employee, is interested because the economic fulfillment of fair price and assured delivery determines either directly or indirectly the continuity of industrial operations and, therefore, of income and profits. The domestic user is interested because a fair price and assured delivery affect his living costs and his personal convenience and comfort.

The conduct and methods of the coal operator and, to a lesser extent, of the miner, in the time of abnormal demand during the war and the subsequent period of inflation, have caused the buying public to be disposed to view with reservations any explanation of the present state of the coal industry. This public considers that the coal industry has been deservedly "let down" from its perch of high profits and high wages and of arrogance and indifference to the present level of supplication and humble petition. It is not disposed to view with tolerance and consideration any pleas of poverty, of reduced earnings, or of physical handicaps of production and distribution as justification for any but the lowest price for a commodity produced and sold in one of the most disorganized and cut-throat markets in the country, a market in which the survival of the fittest, no matter how ethical the method, is the only index of success.

The following discussion of the means available and the value of regularizing the coal industry takes the long view of the question, considering the recent period of continued high prices and public inconvenience as abnormal. Such regularization will have two fundamental values, one social, the other industrial. The only available and feasible method of regularizing the industry is by the location of storage points, all over the country, large enough to enable the mines to operate at a fairly average rate of production throughout the year, while at the same time allowing for an adequate flow of supply to meet the irregular demands. Such a scheme of storage would be primarily a problem for the domestic user as represented, individually and collectively, by the municipality and the state. Industry would be required to provide its own individual and collective facilities. This it already does, or rather can and has done, when a coal strike has been expected and anticipated. Such storage has, however, been unusual rather than a common practice, but the mere fact that it has been done in such an unorganized and individual manner is only proof that it can be done either individually or collectively as a common practice.

## STORAGE OF COAL WOULD TEND TO STABILIZE PRICE

Coal storage to any extent would undoubtedly be an apparent financial burden, but in the long run the provision of the means of bulk storage would be a profitable investment. Such an arrangement would tend to stabilize the price of coal the year round by acting as a reserve reservoir to draw from as required. The bulk of the domestic coal is consumed in the period from December to April, at a charge that is too often exorbitant. During this period industrial consumption is also at a maximum, railroad tracks, yards, sidings and terminals are congested and in very cold weather the transportation system is too liable to temporarily break down entirely. Though industry consumes 35 per cent of the total annual production, the railroads 25 per cent, and less than 16 per cent is applied to domestic uses, it should be noted that these are percentages of the annual production and that the peak of production comes in the winter months, during which time coal for domestic uses forms a larger percentage of the coal moved.

## REGULAR WORK WOULD SIMPLIFY WAGE PROBLEM

Storage facilities would benefit the miner in that it would be possible to anticipate requirements with some degree of exactitude. A certain number of working days per month or per year could be relied on as an irreducible minimum and wage scales set accordingly. Under present conditions the miners' wage scale, like the dock workers' wage scale, is high because it is necessary in 200 days or less to obtain sufficient income to make possible the maintenance of a decent standard of living. The income from the busy periods must be applied to help tide over the slack periods.

The operator would benefit, because his investment, instead of being speculative would become stabilized, the returns being dependent on efficiency of management rather than on the vagaries of the season and the resourcefulness and, too often, unscrupulousness, of the operator. The honest and public-spirited operator, giving his life to serving the public, with ethical standards of fair and just dealing would not have his investment jeopardized and the public good-will impaired and often destroyed by the

operator or broker whose only goal is financial profit and who has no ethical standards or ideals of service.

Such an arrangement of storage, which would be spread over the country just as is the banking system or the grain elevator, would be costly and would necessitate the proper solution of the various engineering features and observance of the requirements of safe storage to prevent deterioration in heat content and spontaneous combustion. By careful and suitable location of the central district, or community, reservoirs, the turnover would be high and the coal kept moving.

As now operated and manned the conditions in the coal industry are somewhat analogous to the conditions obtaining in such industries as garment making and farming, in which the labor, plant and facilities must be adequate to take care of a seasonal peak demand, during which time work is carried on under difficulties and at high pressure, but in which the plant is not susceptible of ready adaptation to any other industry during slack seasons. Labor must thus periodically seek temporary or permanent employment elsewhere, or else stand idle. This condition, under the present system of corporation accounting, requires that the continuing overhead charges be liquidated in the season of maximum demand and results in congestion of rail and terminal facilities and in dissatisfaction due to comparatively high prices and delayed deliveries on the part of the buying and consuming public.

It should not be understood that coal production ceases after the winter period of maximum demand. The railroads and industrial plants continue their demands through the balance of the year, though in reduced degree. Less coal is required by the railroads during the warm season because steam generation can be more economically accomplished and traffic and haulage conditions are less severe, due to the fact that yard work is performed more efficiently and main tracks and sidings are not covered with snow and ice. Industrial operations are at a lower pressure and no fuel is required for domestic or plant-heating purposes.

#### FRUITON DEPENDENT ON LEADERSHIP AND NECESSITY

The practicability and the possibility of working out the suggestions set forth may at first sight seem Utopian and, at least, remote. But the Utopia of yesterday can become the truth of to-morrow, as the world's history has often proved. It is only dependent on leadership and on whether the idea of unconditional necessity is uppermost. Grim need creates the desire and this desire in turn must be converted into tangible works if the need is to be met and satisfied.

Progress is the index of any civilization. In this country the coal industry, like the labor market, is unorganized, chaotic and individualistic in an age that is becoming essentially collectivist by reason of the development and pressure of industry from the old-fashioned home manufactures to such highly specialized production as that of automobiles. The growth of the organized-labor movement and the tendency toward nationalization of public utilities, the progression being from regulation, control and operation to public ownership, are only two of the everyday manifestations of this fact. It is not to be presumed that the coal industry, any more than the railroads, the street railways, the central stations, etc. can escape this tendency. The only way to prevent its realization is for capital and labor to understand that they have a real community of interest in the matter and to get together and agree on some constructive program of control and operation that will leave capital in possession and control of its property, that will insure to labor the power and the right to bargain, individually or collectively, with whom it will, and that at the same time will insure to the public, whether industrial or domestic consumer, an adequate supply of coal at all times at a price that is fair.

If capital and labor do not get together with the public and work out some mutually acceptable and workable scheme of production and distribution at a price that, while not taking from capital a fair profit and from labor a

decent living wage, will at the same time insure to the public an adequate coal supply, the public in the form of government will step in and either by purchase or condemnation, or in some other way, will arrogate to itself the ownership, control and operation of the industry. That its course will be wise or its management and operation efficient is not the question, but for present purposes it is sufficient to observe that this is the direction in which the public is rapidly moving.

This movement can be arrested only by constructive and co-operative action on the part of those most vitally affected. The initiative, under existing conditions, must come from capital. The public is unorganized and, to a certain extent, collectively indifferent; labor generally is hostile to any policy but that of nationalization, with its theoretical advantages and practical shortcomings. Capital, however, in the shape of the mine owners and operators, though not cohesively and kinetically organized, has the potential means of correcting the present unsatisfactory situation of coal-mining operation and of coal production and distribution, in the form of the National Coal Operators Association, the Coal Mining Institute, and its local organizations, together with the coal-trade journals, all acting in conjunction and co-operation with the Department of the Interior, and the departments of Commerce and Labor. Acting together with these organizations, the coal industry, as a whole, can constructively and practically meet the changed conditions and requirements that have grown up, and solve them.

Genuine permanent progress always is the result of evolution, not revolution. Evolution, over an extended period of time, constitutes the revolution of a day, with the difference that the results of evolution are built on the rock foundations of experience, while revolution builds on the shifting sands of theory and expediency.

The whole argument for regularization of the coal industry may be summed up in the statement that such action is daily becoming more necessary in order that the production, distribution and sale of coal may be preserved from the hands of economic and social theorists acting in the capacity of government advisers and agents, with unlimited power to rule or ruin. The public wants coal, as required, at a fair price. Labor wants employment that is continuous and remunerative to the extent of providing an income that will enable a decent standard of living. Capital wants to be secured in the ownership and operation of its property under conditions that will permit a fair revenue return. If something is not done in the near future to end the present chaotic conditions in the coal industry and to organize it along constructive and modern lines the government will be forced to intervene in one manner or another. It is for capital, in the shape of mine owners and operators, to choose. What will be their choice? The answer must not be long delayed if the present structure is not to be upset and a new and strange one erected in its stead.

WHETHER BOYS UNDER THE AGE OF 18 YEARS should be granted permits for working in the mines came under consideration at the recent monthly meeting of the board of miners' examiners at Terre Haute. George Richards, the representative of the operators, took exception to the ruling of the Industrial Board at Indianapolis the previous day, holding that the age of the miner was governed by section 23 of chapter 132 of the acts of 1921 in the new attendance law. He explained that mining was in 1904 designated by law as a dangerous occupation and always has been considered such. The section referred to by Mr. Richards follows immediately the one set forth by the Industrial Board and states that "no minor under the age of 18 years old shall be employed, permitted or suffered to work in any capacity in the following occupations: Oiling and cleaning machinery; in the operation of any elevator, lift or hoisting machine; in any saloon, distillery, brewery, or any other establishment where malt or alcoholic liquors are manufactured, packed, wrapped or bottled; or in any other occupation dangerous to life or limb, or injurious to the health or morals of such minor."

## Massachusetts Fuel Administrator Prepares Statement Against Anthracite Tax Laws

EUGENE C. HULTMAN, Fuel Administrator for Massachusetts, has prepared a memorandum for the Attorney-Generals of New England and New York relative to the recently enacted Pennsylvania tax laws on anthracite. He summarized the enactments as follows:

No. 225—An act imposing a state tax of  $1\frac{1}{2}$  per cent on anthracite, providing for the assessment and collection thereof and providing penalties for the violation of this act; effective July 1, 1921.

No. 444—An act affecting anthracite mines and operations, establishing the Pennsylvania State Anthracite Mine Cave Commission, defining its jurisdiction and powers, imposing an assessment of 2 per cent and duties upon owners and operators of anthracite mines and imposing penalties; effective Aug. 27, 1921.

No. 445—An act regulating the mining of anthracite, prescribing duties for certain municipal officers and imposing penalties; effective Aug. 27, 1921.

"At least twice before, in 1913 and 1915, the State of Pennsylvania imposed a tax on anthracite. The law of 1913, almost identical with the present law, was later declared unconstitutional. The State of Pennsylvania did not attempt to collect the tax imposed by the law of 1915, which was palpably unconstitutional. However, under both the 1913 and 1915 statutes the producers collected an amount equal to the tax. After the decision of the court in the case of the 1913 statute some producers refunded to the retail dealers while others did not; but in any case, so far as I have been able to find out, the refund did not go back to the ultimate consumer, upon whom it had been levied. The same situation existed in connection with the 1915 statute. If it is intended again to exploit the people by adding this tax to their already crushing burden due to the existing high price of domestic coal, it is most urgent that the real purpose of Act No. 225 be determined in order to prevent the recurrence of this unfair practice. It appears that the price of coal has been increased by some producers without specifically billing the tax on the invoices. Therefore, the retail dealers and the consumers cannot recover any excessive amount paid for coal even if the law is declared unconstitutional.

"If this method of taxation is constitutional, a precedent has been established that will endanger our industrial prosperity and the welfare of large numbers of our people. There is nothing to prevent this tax from being increased indefinitely at the pleasure of the State of Pennsylvania, so that property and other taxes can be made practically negligible. Furthermore, this probably will result in a tax being levied on bituminous coal produced in Pennsylvania. In view of the above, it is of the first importance for New England and New York to consider the possibilities confronting their industries.

"New England and New York receive most of their coal from Pennsylvania and West Virginia on account of proximity of these fields, drawing from them annually approximately 32,000,000 net tons of anthracite and 50,000,000 net tons of bituminous coal. All of the bituminous coal is used for railroad, industrial and commercial purposes. About 60 per cent of the anthracite consumption is by householders, the balance being used principally by large buildings, gas companies, etc.

"The tremendous importance financially of the present tax levy cannot be fully appreciated without considering the fact that New England and New York receive a total of about 23,000,000 gross tons of domestic anthracite annually out of a total production of about 52,000,000 gross tons. Steam sizes of anthracite are in competition with bituminous coal and cannot absorb this additional expense, which must be added entirely to the prices charged for domestic sizes. Reliable authorities estimate the probable cost of the  $1\frac{1}{2}$  per cent tax levy at 15c. per ton on the domestic sizes. At this rate New England and New York are being assessed \$3,450,000 per year for the governmental expenses of the State of Pennsylvania.

"As long as New England and New York are dependent

upon anthracite for their domestic requirements we will have to pay the price and the taxes imposed upon us by the State of Pennsylvania should such laws be constitutional. If such laws are not constitutional, some legal regulation or governmental supervision should be provided in connection with the collection of the tax, pending the decision of the court in regard to its constitutionality, to prevent the exploitation of the coal consumers. In this way it will be possible at least to insure the refund of the tax to the people from whom it has been collected and afford protection against a repetition of the plundering which took place in 1913 and 1915.

"In the case of Act No. 225 the anthracite operators are required to make their first report to the Pennsylvania State authorities on Jan. 1, 1922.

"The Fowler act (No. 444) is claimed to offer liability insurance to operators in case of cave-ins and surface damage. It establishes a commission of three members, each to receive \$8,000 per annum, which will have complete control of disbursements, employment of specialists, engineers, etc. Reliable authorities in the trade estimate that collections or premiums at the rate of 2 per cent on sales in the case of one-half of the total production would amount to over \$5,000,000 annually. In order to continue such a commission indefinitely it is evident that disbursements will nearly equal the receipts to avoid the possibility of its discontinuance by the accumulation of a surplus. Therefore, I am of the opinion that in addition to supporting many of the charities of Philadelphia the anthracite consumer has a direct financial interest in this governmental agency of the State of Pennsylvania.

"The Kohler act (No. 445) is considered as complementary to the mine-cave law, No. 444.

"Judge Henry A. Fuller, of the Court of Common Pleas of Luzerne County, Wilkes-Barre, Pa., has recently rendered a decision in which he holds that Act No. 445 is unconstitutional. The test case was brought by H. J. Mahon and wife, of Pittston, who sought to restrain the Pennsylvania Coal Co. from mining under their home. The case will be appealed to the State Supreme Court."

Mr. Hultman submitted his statement for the information and consideration of the Attorney-Generals of New York and the New England States as to whether or not it is possible to take suitable action to safeguard the interests and welfare of their respective people.

## Lehigh & Wilkes-Barre Coal Co. Declares Special Dividend of \$35 a Share

THE Lehigh & Wilkes-Barre Coal Co. announced Nov. 21 a special dividend of \$35 a share. It is payable Nov. 29 to stock of record Nov. 21. The following statement was given out:

"The president reported that on Nov. 17 the Central Railroad Company of New Jersey had agreed to sell the 169,788 shares of this company's stock owned by the Central Railroad of New Jersey and recommended to the board that the dividend action be taken in light of this change."

It was learned that Burns Bros.' share in the syndicate that purchased the 169,788 shares of Lehigh & Wilkes-Barre Coal Co. stock was approximately 25 per cent and that the investment in the coal property will approximate \$8,000,000. Officials of Burns Bros. said the interest of that corporation in the coal property assured an adequate supply of the best quality coal at the lowest mining cost.

THE COAL COMMITTEE of the Federal Purchase Board met Monday, Nov. 21, to decide on procedure to place the purchase of coal supplies by the government on a practical basis. The committee will confer with operators and dealers and expects to submit a report by the first of the year in which definite plans in the matter of coal purchases by the government departments will be set forth. The government annually purchases about 9,000,000 tons of coal, of which 600,000 tons is anthracite. The bituminous purchases are made up of 2,500,000 tons by the navy, 2,000,000 tons each by the Shipping Board and army and 250,000 tons by government departments in the District of Columbia.

## Railroads Ask Extension of Rate Cut on Hay and Grain To All Farm and Animal Products

Further Reductions Impossible Until Wages Are Again Pared—Coal Jobbers Demand Drastic Cut in Freights to 1917 Level—Drop in Revenue Would Jeopardize Safety of Roads, Says J. H. Parmelee

**I**N ORDER that more widespread relief can be realized by the agricultural industry from a reduction in freight rates, the Interstate Commerce Commission was asked on Nov. 23 by the carriers to reopen its decision rendered on Oct. 20 last ordering a cut in hay and grain rates, according to a statement issued by the Association of Railway Executives. As a substitute the carriers propose a reduction, for an experimental period of six months, of 10 per cent in carload rates on practically all products of the farm and of animals.

"The effect of this proposal," said the application, "will be an immediate reduction in carload rates on the products of agriculture and the products of animals which are mentioned, but as soon as and to the extent that a reduction in wages is obtained from the Labor Board on the proposed application a further reduction in rates (except as meanwhile put into effect), to be distributed among the users of transportation in such manner as this honorable commission may determine.

"The proposal thus deals immediately and without waiting for a reduction in operating costs, in the manner stated, with the needs of agriculture and undertakes to make further reductions not confined to agriculture as soon as further reductions are made possible by the proposed reduction in wages.

"Your petitioners, in view of the condition and of the special needs of the transportation industry, do not believe that any further reductions in rates than those herein mentioned should be made until there is a reduction in operating costs. They further submit that there is no justification for treating grain, grain products and hay prefer-

entially or for giving special and preferred advantage to the territory covered by the order in this cause, and that the measure of reduction recently ordered by this honorable commission cannot be extended to the other products of agriculture or throughout the country without serious injury, injustice and hardship to the transportation industry."

This proposal is made by the carriers, the application points out, for the purpose of aiding in the economic readjustment and relieving the "serious economic distress" of the agricultural industry, despite the fact that the financial condition of the railroads does not warrant such a move.

"The net operating income of the railroads in 1920 amounted to \$62,000,000, as against a normal in other years of more than \$900,000,000," the application says, adding "and even this amount of \$62,000,000 included back mail pay received from the government for prior years of approximately \$64,000,000, thus showing, when the operations of that year alone are considered, an actual deficit before making any allowance for either interest or dividends." Interest requirements alone for 1920 amounted to approximately \$475,000,000, the application says. For the first nine months this year the net operating income of the carriers was \$391,384,719, which was only 2.9 per cent of the value of their properties as tentatively fixed by the commission for rate-making purposes.

The application added:

"The foregoing were the operating results notwithstanding the fact that the carriers as a whole were compelled to reduce their expenditures for maintenance of way and equipment for the said nine months' period \$426,793,121 below what was expended for these purposes during the

Extracts from a signed statement by George Cushing in the *American Coal Wholesaler*:

"Primarily we must have a readjustment of coal rates. We are not safe nationally or as an industry until these rates come down.

"Now the coal trade finds itself where it must move with vigor to protect its own best interests without too much regard for the consequences to others. It must act or face that ruin which is inevitable if a Bourbon policy continues to control the American roads.

"The situation summed up is: The thing which is damming up the activities of the coal business and threatening us with regulation is the present high freight rate on coal. These are being maintained at 40 per cent above the rates which prevailed during the war and for ten months after the signing of the armistice. And they are maintained on that level despite the fact that coal prices at the mines are far below the Fuel Administration's war prices.

"Our association has declared that not only must the last 40 per cent be taken off the freight rates but those freight rates must go back to below what they were in 1918, the same as coal and other things have done. Our association has taken a flat position that freight rates and service charges must come down to 1917 level.

"In other words the question of a freight rate readjustment is going to be decided by the commission before the winter is over. This action has been taken by this association because nobody else showed any inclination to take it.

"When your association has taken this definite action, you are losing an opportunity if you do not inform your

customers at once of the fact that you are a member of the association which is moving to bring down freight rates in their interest."

"The issue is clear.

"If present wages are to be continued, rates cannot be reduced. If rates are to be reduced, the present wages cannot be paid.

"The railroads are powerless to take any other position."—T. DEWITT CUYLER, Chairman, Association of Railway Executives.

"The railroads of the United States are desirous of responding to the almost universal demand that railroad rates be reduced.

"The railroads have, in fact, determined to seek to reduce rates, and, as a means to that end, to further reduce wages, complying in all respects in so doing with the Transportation Act.

"How can a reduction of rates be brought about?

"The first obligation of the railroads is to render adequate service to the public at reasonable rates.

"The present rates are in many cases high, but reduction can be effected only by reducing the cost of operation, by far the largest element of which is the payroll.

"A general reduction of rates, without at least a corresponding reduction in wages, would weaken the railroads to a point where adequate service would be in jeopardy."—DR. JULIUS H. PARMELEE, Director, Bureau of Railway Economics, Washington, D. C.

corresponding period of nine months of the previous year. The policy of rigid economy made necessary by these results, and the consequent cutting to the bone of the upkeep and maintenance of the properties was at the price of neglecting, and for the time deferring, work which must hereafter and in the near future be done and paid for.

"The recent reduction by the Labor Board of wages, estimated at from 10 to 12 per cent, in no sense meets or solves the problem of labor costs and in no way makes it possible for the carriers to afford a reduction in their revenues. Notwithstanding this, however, the carriers have since the rate increase in Ex Parte 74 made many hundreds of thousands of reductions in freight rates, these reductions having resulted, it is estimated, in a reduction in the carriers' revenues of from \$175,000,000 to \$200,000,000 a year on the basis of normal business.

"The only practicable method of obtaining relief from these excessive labor costs is through an order of the Labor Board, which can be rendered only after a hearing of the parties.

"From the foregoing general outline of the circumstances of the carriers it is clearly apparent that without a substantial reduction in costs the transportation industry is in no condition to afford any reduction whatever in its revenues. It is urged that some interest must take the risk of the first step to relieve the industrial congestion which is holding business back and down, and the railroads are urged to take this first step, and to reply upon public opinion to bring about promptly the necessary reduction in operating costs, including a just reduction in the abnormally high cost of labor.

"The demand for reduction in rates is thus based on

economic considerations, and if yielded to either by the carriers voluntarily or by this honorable commission, the effort should be made to work out a method that will bring the maximum relief to the industry which is suffering most from economic hardship and depression."

The carriers point out that "the problem is to find a means of aiding in a vast economic readjustment and to relieve serious economic distress—not as a right but as a matter of high and wise expediency and in a way that will best promote the public welfare."

"Your petitioners," the application continues, "however, submit that if there is to be a reduction in rates for the benefit of agriculture, there seems little justification for confining such reductions to rates on grain, grain products and hay, or to any particular section of the country. The economic reasons in favor of reductions apply with equal force to other products of the farm and to other territorial sections. The demand on the part of the agricultural public for a reduction in freight rates is not confined to the commodities covered by this proceeding and is not confined to the Western district. The commission and the carriers have been, or will be, confronted by the necessity of meeting the demand for a wider application among agricultural products of proposed reductions and for a more extensive territorial application of them. It is not apparent how this demand can be successfully distinguished from the action taken by the commission in this cause, and yet a general application of the scale of reductions ordered in this case to other agricultural products and to other territories of production would involve a loss of revenue to the carriers which would seriously impair their capacity to perform their public obligations."

## Whole Subject of Coal Facts Taken Up in Considering Request That Commerce Dept. Issue Coal Reports

Congress Adjourns Without Passing Coal Legislation—Many Coal Producers More Interested in Return of Industrial Activity Than Reduced Freights—Standardized Government Contract Favored

BY PAUL WOOTON  
Washington Correspondent

THE action of the board of directors of the National Coal Association in formally requesting the transfer of the issuance of the weekly coal report from the Geological Survey to the Department of Commerce has precipitated a full review by the federal government of the whole subject of fact-finding as applied to coal. On his return to Washington from Cincinnati, J. D. A. Morrow, vice-president of the National Coal Association, personally took the resolution of the board of directors to the White House. It is understood that the President will go deeply into the whole question before issuing any order in regard to the transfer of duties.

It has been recognized for some time that a definite understanding with regard to coal fact-finding would have to be reached. During the consideration of the Frelinghuysen bill the Senate clearly indicated that it is not inclined to determine just how fact-finding shall be conducted. The appropriations committees of Congress on several occasions have shown little interest in this type of work and in one instance, at least, declined to act even after receiving a well emphasized request for a small sum to continue the statistical work begun by the Fuel Administration.

Recently the U. S. Geological Survey advised the National Coal Association and others interested that its appropriations are not sufficient to permit of the continuance of the full weekly coal report. This report requires a large amount of work and has been carried on at a considerable sacrifice to the Survey. The need for the report, however, was so apparent that it has been continued despite the recognition

that some three times the amount of money available should be spent to make the report what it should be.

In a conversation between Herbert Hoover, Secretary of Commerce, and J. G. Bradley, president of the National Coal Association, it developed that the Department of Commerce could arrange for the money needed to carry forward the weekly report. When a similar situation arose previously the National Coal Association supplied the funds needed to tide the report over until another appropriation became available. As the coal producers form only one of the groups that benefit by the availability of these figures there is a feeling that the expense should be borne by the government. For that reason, Mr. Morrow points out, the National Coal Association favored the collection of this information by the agency which had money of its own to do it. He emphasizes the statement that the action of the board is not to be taken as a reflection upon the Geological Survey.

It is known that the President already has taken steps to obtain full information in regard to the matter before acting on the National Coal Association's resolution. It is not a foregone conclusion that he will consent to the transfer of this work. To separate the weekly report from the agency charged with the collection of the annual data would carry with it duplications and increased expense. Whether there will be compensating advantages the President doubtless will attempt to determine. It was not the intention of the Geological Survey to discontinue the weekly report entirely. Unless additional appropriations could be obtained, however,

it would be necessary for the Survey to give up the collection of data as to the percentage of full time output. This portion of the report requires the collection of data on losses of output due to transportation disability, labor shortage, strikes, mine disability, no market and all other causes. The gathering of that information, along with the necessary checking to insure its accuracy, calls for a particularly large amount of work.

After completing half of the scheduled program for which it was called in extra session by the President April 11 last, Congress adjourned Nov. 23 but will reconvene for the regular session Dec. 5. While the tariff and tax revision bills were the goal at the last session, only the tax revision bill was completed and the tariff bill goes over until the next session. The last session was marked by coal discussion but no action on this question, the tenor of Congress not being inclined to government regulation as proposed. The Frelinghuysen seasonal rate bill, designed to stimulate coal purchase and storage during the summer, was recommended to the Senate Committee on Interstate Commerce. The debate on this bill included discussion of Senator Frelinghuysen's bill to aid in coal stabilization through various reports to government departments, but that measure was not separately considered by the Senate, although Senator Frelinghuysen announced he would call it up after the tax bill was disposed of. As the tax measure occupied all of the Senate's time up to adjournment no opportunity afforded.

Senator Kenyon, of Iowa, introduced a coal-regulation bill and a bill designed to prevent profiteering in coal but did not press the measures, as he realized the Senate was in no mood to consider them.

The Senate Committee on Labor made an exhaustive investigation in the West Virginia coal strike and is expected to report thereon next session. A bill for mining leases on the Fort Peck (Mont.) Indian lands, passed by the Senate, was sidetracked in the House on objection of Representative Stafford, of Wisconsin, and was placed in an unfavorable position, at the foot of the calendar. While a number of coal bills were introduced in the House, they were not considered either by committee or the House itself.

#### THINK RATE REDUCTIONS WOULD HAVE LITTLE EFFECT

As the consideration of reductions in coal rates progresses it is becoming increasingly evident that many coal producers feel that their business would benefit but little were the rates to be reduced. Even if there should be a reduction of 10 per cent in the rate on coal, it would not be reflected generally in the price quoted the ultimate consumer. Even if the full reduction were passed on to the consumer, it would not make enough difference in price to stimulate coal purchases to any great extent, it is believed. The average coal producer is not losing sight of the fact that a reduction of 10 per cent, when applied to coal, means a reduction of that amount on one-third of the freight tonnage handled by the railroads. Reductions applied to commodities moving in less volume do not dig so deeply into earnings. There is general recognition that even now the transportation machine is badly crippled through lack of earning power. It requires only casual observation to recognize that the railroads are not being rejuvenated and that even maintenance is being neglected through lack of money.

The feeling among coal producers is that the one thing that will make their business prosperous is the return of industrial activity. For that reason many of them would prefer to see any reductions the railroads are able to make apply to manufactured products, although the general impression seems to be that the railroads are in no position to reduce rates at this time. They at least would like to see the railroads attain a financial position which would allow them to meet their coal bills promptly.

A standardized contract to be used by the government in the purchases of coal is expected to be evolved as a result of conferences between the coal sub-committee of the Federal Committee on Co-ordination of Purchases and representatives of the National Coal Association. At present nearly every coal-purchasing bureau of the government has a different form of contract. Many of these contracts con-

tain features which are needlessly annoying. As a result there has been a decreasing amount of competition for government business. Many coal men refrain from bidding for government business because of these annoyances. It is believed that a standardized contract can be perfected that will give the government ample protection and have the effect of reducing its coal bill, in that there will be a more general desire to secure the business. George Reed, of the Peabody Coal Co., of Chicago, is directing the National Coal Association's participation in the matter. F. R. Wadleigh, of the Department of Commerce, is chairman of the coal sub-committee of the Committee on Co-ordination of Purchases. The existing contracts are now being gone over by government solicitors to determine if any of the provisions of these contracts are made mandatory by law.

### Report of Coal Stocks to Be Out Dec. 3; Will Be Most Complete Ever Issued

THE report of coal stocks being gathered by the U. S. Geological Survey will be issued Dec. 3. It will be the most complete report of this character ever issued by the government. The returns will be 100 per cent complete from the large consumers, such as steel plants, byproduct works and class 1 railroads. The returns from other types of consumers promise to be in excess of 95 per cent. The report covers more classes of consumers than does any previous stock report and contains much more information with regard to coal in transit.

The large percentage of returns on the questionnaire is accounted for by the fact that consumers have found these reports useful and are anxious to promote their success.

### To Probe All Rates for Possible Cuts

BEGINNING Dec. 14 at Washington the Interstate Commerce Commission will begin a general investigation into all railroad rates for the purpose of determining what further reductions can lawfully be made. The investigation will cover coal rates, investigation and reduction of which was recently asked in a petition by the American Wholesale Coal Association.

### Monongahela Power Co. May Connect Its Lines with West Penn Power Co.

AN agreement has been made by which the West Penn Railways Co., which controls the West Penn Power Co., a large supplier of electric power to the coal mines in the Pittsburgh district, will purchase the West Virginia & Maryland Power Co., of Kingwood, W. Va. This latter company supplies electric service from Grafton, W. Va., eastward through Taylor and Preston Counties in West Virginia and in Garrett County, Maryland, thus feeding the coal fields along the upper Potomac. The plant at Grafton was recently purchased by the incorporators of the West Virginia & Maryland Power Co., and the sale to the West Penn interests carries with it the Grafton plant.

Work has already been started on a power transmission line connecting with the present system of the West Penn Power Co., and extending south through the Cheat River basin to Tunnelton, Rowlesburg and Newburg on the main line of the Baltimore & Ohio R. R. Arrangements also have been made by which a direct power transmission line will be built from Grafton to Rivesville on the Monongahela River just below Fairmont, at which point is located the large power plant of the Monongahela Power & Railway Co., one of the largest utility companies in West Virginia. Service for Grafton will be purchased from this latter company and it is expected that at an early date the transmission lines from the West Penn system will connect to the line from Fairmont, thus making a substantial tie-in connection between the Fairmont and West Penn plants.

This purchase adds greatly to the territory served by the West Penn interests and it is believed that the construction of the power lines will do much to open up and develop the rich coal fields throughout the territory they traverse.

## Sale of Lehigh & Wilkes-Barre Coal Shares May Cause Clash of Interests

THE recently reported sale of the holdings of the Central Railroad of New Jersey in the Lehigh & Wilkes-Barre Coal Co. is likely to precipitate a battle among big interests. The Board of Directors of the Jersey Central, with five proposals for purchase of its 169,788 shares of Lehigh & Wilkes-Barre Coal Co. stock in hand, accepted a bid of \$185 per share, or \$31,410,980. This offer, which was not the highest, was made by an inside syndicate headed by Jackson E. Reynolds, a vice-president of the First National Bank of New York, nor was it made on the same basis as to facts and information furnished by the New Jersey Central Railroad nor as to date with that which the four other proposals were made.

The highest bid was that of the Lehigh Coal & Navigation Co., of \$190 per share, or \$32,259,720. The Franklin Securities affiliated with the Franklin National Bank, of Philadelphia, put in a similar proposal carrying a bid of \$31,920,144. Brown Brothers & Co., also of Philadelphia, headed a syndicate which bid \$28,694,172, with interest on deferred payments. Kuhn, Loeb & Co., of New York, bid \$29,125,000, with interest on deferred payments, for the Massachusetts Gas Co.

The five proposals were opened Nov. 17. The bid of the Reynolds syndicate, made as of that date, was \$31,410,980, or at \$185 per share, which was \$35 above the price offered two weeks previously. It carried interest on deferred payments, \$10,000,000 to be paid Dec. 6 and the balance strung along until Oct. 1 next. The interest to be paid figured about \$1,000,000, so that the whole payment would be about \$32,495,000. On that proposal the New Jersey Central board sold the company's holding of Lehigh & Wilkes-Barre coal stock to the Reynolds syndicate.

## Coal-Mining Y's to Hold Annual Session in Charleston, W. Va., Dec. 7 and 8

REPRESENTATIVES of the Young Men's Christian Associations in coal-mining communities of West Virginia and Kentucky hold their fourth annual conference at the Hotel Kanawha, Charleston, W. Va., Dec. 7 and 8. In addition to discussions on policies and methods of Y. M. C. A. work, the program arranged offers much opportunity for discussion of general aspects of human relations in the coal-mining industry.

Among the speakers will be Ex-Governor John J. Cornwell; J. W. Bischoff, general manager of the West Virginia Coal & Coke Co., Elkins, and president of the West Virginia Mining Institute; Carl Scholz, of the Raleigh-Wyoming Coal Co., Charleston; Charles R. Towson, head of the industrial department of the International Committee of Y. M. C. A.'s, New York City; J. Blaine Withee, state boys' work secretary of the Y. M. C. A., Parkersburg, W. Va., and Dr. Henry F. Kallenberg, secretary of the International Committee for Health and Recreation, New York City.

J. G. Bradley, of Dundon; J. R. Thomas, of Charleston; A. R. Beisel, of Huntington, and E. E. Drennen, of Elkins, constitute the advisory committee of the Y. M. C. A. for the coal mining industry of West Virginia. A special dinner session of the conference, under the auspices of this committee, will be held at the Hotel Kanawha, Thursday evening, Dec. 8.

## Kansas Operators May Ask Injunction Against Sending of Strike Aid

COAL operators of Kansas are reported to be considering an early appeal in some one of the United States district courts in Illinois seeking an injunction against the Illinois United Mine Workers' Union sending "check-off" funds into Kansas for the aid of the Kansas striking miners. The likelihood of such action was pointed out in *The Chicago Journal of Commerce* a few weeks ago.

Illinois miners recently voted to assess each member \$1 a month toward a \$90,000 monthly fund for the Kansas strikers. At the time persons in the coal trade raised the

question of legality of such action, in view of the injunction issued by Federal Judge A. B. Anderson at Indianapolis, restraining the International United Mine Workers' Union from sending strike funds into West Virginia.

It is understood that the Kansas operators held a meeting Nov. 22 to consider the injunction appeal.

## Wage Agreement in British Columbia Renewed for Two Years

AT a mass meeting of the Canadian Collieries (Dunsmuir), Ltd., recently held at Cumberland, the wage agreement which has existed between the miners and the company for the past two years was renewed for a similar period. There were a few minor changes, for the most part in the men's favor. The scale of wages has been regulated by a commission on the cost of living which includes a representative of the men, a representative of the company and the fair-wage officer. The commission investigates the cost of living in the district for three months and regulates wages accordingly. This provision applies to the new agreement. There are more than one thousand men affected, and the fact that an understanding was reached without any friction is a striking commentary upon the good relations existing between the management and the men. Recently the company erected a large hall for the men at a cost of \$30,000. It also has laid out a new athletic ground which is said to be one of the best in the province.

## Destination of Lake Cargo Coal Shipped During Season to End of October

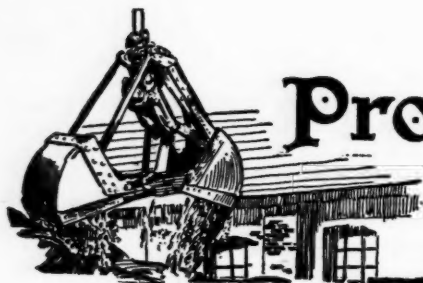
DISTRIBUTION of soft coal shipped up the Lakes this season has closely resembled that of 1919. The records of the Ore & Coal Exchange show that at the end of October a total of 20,865,000 net tons had been shipped, as against 20,757,000 tons in 1919. Of the total shipments, 16,415,000 tons, or 78.7 per cent, went to American ports, practically the same percentage as in 1919. Shipments to Canadian destinations were 4,450,000 tons. The charges in distribution between the different groups of ports have not been great. The movement to American points on Lake Superior totaled 9,577,000 tons and accounted for 45.9 per cent of the total shipments. In comparison with 1919 this was both an actual and relative increase. A corresponding decrease occurred in shipments to Lake Michigan, which totaled 5,547,000 tons, against 6,105,000 tons in 1919.

DESTINATION OF CARGO COAL DUMPED AT LAKE ERIE  
PORTS FROM OPENING OF SEASON TO OCT. 31

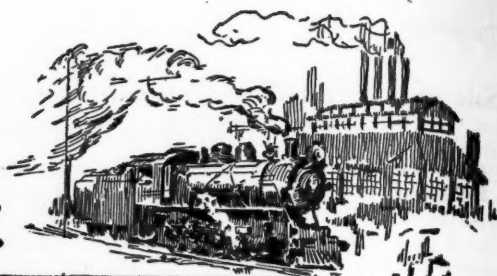
Destination	1919		1920		1921	
	Net Tons	Per Cent	Net Tons	Per Cent	Net Tons	Per Cent
<b>American</b>						
Lake Superior ports.	9,193,000	44.3	7,605,000	39.8	9,577,000	45.9
Sault Ste. Marie and river points....	329,000	1.6	490,000	2.6	311,000	1.5
Lake Huron-Georgian Bay ports.	291,000	1.4	188,000	1.0	209,000	1.0
Lake Michigan ports.	6,105,000	29.4	4,737,000	24.8	5,547,000	26.6
Port Huron and Detroit River.....	310,000	1.5	768,000	4.0	614,000	2.9
Lake Erie ports.....	59,000	0.3	45,000	0.2	157,000	0.8
<b>Total American</b>	<b>16,287,000</b>	<b>78.5</b>	<b>13,833,000</b>	<b>72.5</b>	<b>16,415,000</b>	<b>78.7</b>
<b>Canadian</b>						
Lake Superior ports.	1,581,000	7.6	1,704,000	8.9	1,873,000	9.0
Sault Ste. Marie and river points....	805,000	3.9	1,031,000	5.4	710,000	3.4
Lake Huron-Georgian Bay ports.	728,000	3.5	838,000	4.4	750,000	3.6
Port Huron and Detroit River.....	330,000	1.6	385,000	2.0	347,000	1.6
Lake Erie ports.....	48,000	0.2	10,000	0.1	79,000	0.4
Lake Ontario and St. Lawrence River	978,000	4.7	1,290,000	6.8	691,000	3.3
<b>Total Canadian</b>	<b>4,470,000</b>	<b>21.5</b>	<b>5,258,000</b>	<b>27.5</b>	<b>4,450,000</b>	<b>21.3</b>
<b>Grand totals.....</b>	<b>20,757,000</b>	<b>100.0</b>	<b>19,091,000</b>	<b>100.0</b>	<b>20,865,000</b>	<b>100.0</b>

## Anthracite Miners to Prepare Wage Scale

UNITED Mine Workers executive boards of the three anthracite districts have issued official notice summoning a tri-district convention to meet in Shamokin, Jan. 17, 1922, to formulate wage schedules and other proposed conditions of employment to take the place of the wage agreement which expires March 31, 1922.



# Production and the Market



## Weekly Review

**C**ONSUMER conservation is the prevailing note in the coal industry today. In both the steam and domestic branches business is extremely sluggish. The present extreme slump in steam demand, due to buying against the recent threatened strikes, will become less acute as accumulated stocks wear down. The low rate of industrial consumption, however, will serve as a barrier against any early spot activity and even the most optimistic see few encouraging signs for the next sixty days.

Very little spot coal is moving, and when it does move it goes at bargain prices. The buyer is "writing his own ticket," and operators are forced to accept unprofitable business or else close down. The only exception to the universally sluggish market is in the Northwest, where sub-zero temperature has increased the movement. This is entirely local and has no effect on current production, as the main source of supply—the Head-of-the-Lakes docks—is well prepared to meet even the strongest demand ever made upon it.

### WARM WEATHER AND IDLENESS HAMPER TRADE

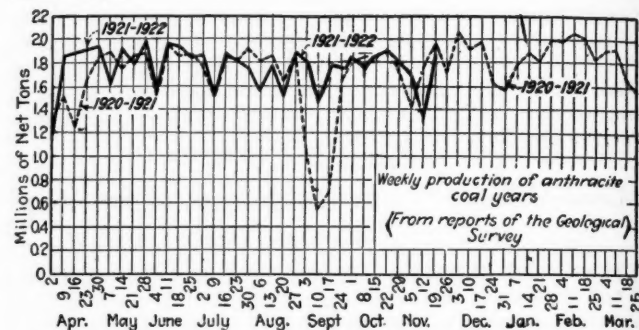
Colder weather is needed to revive domestic trading. Retail yards are full to overflowing, but the distribution to consumers still lags. The extensive unemployment coupled with unseasonable weather has proven a disastrous combination for retail dealers and domestic producers alike.

The Hampton Roads market is weaker. Dumpings for all accounts are on the decline and only in the bunker trade is there any semblance of activity. Marine freights, coastwise and export, are softer, the former being productive of but little additional tonnage, while oversea business is nil.

No decision has been announced on the appeal against Judge Anderson's check-off injunction. If the injunction be upheld a strike is sure to follow, which would give the country a chance to consume some of the top-

heavy coal stocks that are on hand. The Colorado mines, where a strike was ordered in protest against a wage cut, are working about 90 per cent.

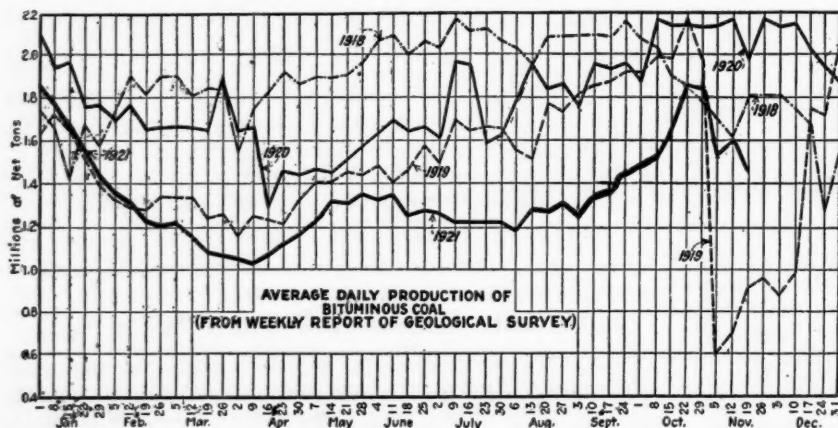
Anthracite markets feel the sluggishness caused by the warm weather. While producers are running full time, they have been able to do so mainly because of the interruptions caused by the many holidays that have occurred recently. Domestic demand has dropped sharply, as best reflected by the fact that independent quotations are off 25c. to 50c. on the family sizes. The less favored large coals are backing up at some operations, while steam sizes are suffering because of the heavy oversupply and are in the weakest position of the season.



Coke buying is still suspended. Independent beehive plants are showing less activity, but the Frick company continues to increase its production.

### BITUMINOUS

The sluggish markets are clearly indicated in production figures for the week ended Nov. 19, when 8,843,000 net tons were mined, according to the Geological Survey. This is a slight increase over the previous week, but because of the successive holidays the two weeks immediately preceding do not offer a fair comparison. The week's output was 2,206,000 tons lower than that of the high point reached just before the railroad strike was averted, and production per working day was the lowest since late in September. A



### Estimates of Production

(Net Tons)

#### BITUMINOUS COAL

Week Ended:	1921	1920
Nov. 5 (b).....	9,327,000	11,429,000
Nov. 12 (b).....	8,582,000	12,132,000
Nov. 19 (a).....	8,843,000	11,693,000
Daily average.....	1,474,000	1,949,000
Calendar year.....	364,961,000	484,042,000
Daily average cal. year.....	1,338,000	1,767,000

#### ANTHRACITE

Nov. 5.....	1,716,000	1,429,000
Nov. 12.....	1,373,000	1,770,000
Nov. 19 (a).....	1,910,000	1,993,000
Calendar year.....	79,113,000	78,116,000

#### COKE

Nov. 12.....	103,000	389,000
Nov. 19 (a).....	111,000	364,000
Calendar year.....	4,826,000	18,826,000

(a) Subject to revision. (b) Revised from last report.

further decline is indicated by preliminary reports of loadings for the first two days of the week of Nov. 26.

There is a growing interest in the coming miners' conference, scheduled for next February, on the formation of new wage demands. The feeling is growing that April 1 will see a moderate liquidation in the wage scale effected without much trouble with the U. M. W. of A.

October production is estimated at 43,733,000 net tons, compared with 35,127,000 tons in September and 34,538,000 in August. The year's production to Nov. 1, is 340,037,000 tons.

#### PRODUCTION OF SOFT COAL, BY GROUPS OF STATES, 1918-1921 (In thousands of net tons)

Region	First ten Months of 1921	1920	1919	1918
Northeast a.....	202,174	331,510	300,420	351,365
Southern Appalachian b.....	14,202	23,500	20,803	26,083
Eastern Interior c.....	82,546	130,800	90,407	130,768
Western Interior d.....	16,561	29,930	21,741	30,724
Mountain States and Northwest e.....	24,554	40,680	32,381	40,341

Totals f..... 340,037 556,420 465,752 579,281

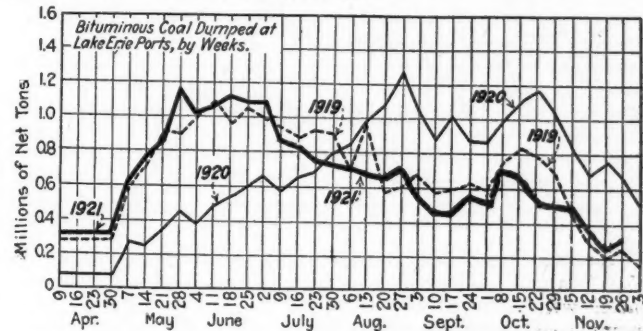
(a) Michigan, Pennsylvania, Ohio, West Virginia, Maryland, Eastern Kentucky and Virginia. (b) Alabama, Georgia and Tennessee. (c) Illinois, Indiana and Western Kentucky. (d) Iowa, Kansas, Missouri, Oklahoma, Arkansas and Texas. (e) Colorado, New Mexico, Utah, Wyoming, Montana, North Dakota and Washington. (f) Alaska, California, Idaho, North Carolina, Oregon and South Dakota not included.

New England shipments via all-rail continued to decline during the week ended Nov. 19, when 3,022 cars were forwarded—437 less than in the week previous. Stocks are heavy in that section and will suffice until well into January,

and consumers are not disposed to purchase further at this time.

Lake tonnage reflects the end of the season. During the week ended Nov. 28 there were 307,225 net tons dumped—297,488 cargo and 9,737 vessel fuel—as compared with 273,569 tons the week before. The season's movement stands at 22,932,800 tons; in 1920 it was 23,132,072. Upper Lake docks are finding a belated rush of orders which followed a sudden drop in temperature.

Coal Age Index of spot bituminous prices dropped from 88 on Nov. 21 to 86 on Nov. 28.



Tidewater business slumped sharply during the week ended Nov. 24. Dumpings at Hampton Roads for all accounts were 160,878 gross tons, as compared with 290,433 the week previous. Export markets continue out of the

### Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

Low-Volatile, Eastern		Market Quoted	Oct. 31, 1921	Nov. 14, 1921	Nov. 21, 1921	Nov. 28, 1921†
Pocahontas lump.....	Columbus.....	\$4.80	\$4.75	\$4.35	\$4.25@4.50	
Pocahontas mine run.....	Columbus.....	2.55	2.55	2.35	2.25@2.50	
Pocahontas screenings.....	Columbus.....	1.75	1.60	1.70	1.60@1.75	
Pocahontas lump.....	Chicago.....	4.75	4.75	4.35	3.60@4.60	
Pocahontas mine run.....	Chicago.....	3.15	2.85	2.65	2.00@2.75	
*Smokeless mine run.....	Boston.....	4.80	4.80	4.80	4.75@4.90	
Clearfield mine run.....	Boston.....	1.95	1.95	1.80	1.60@2.00	
Cambria mine run.....	Boston.....	2.45	2.45	2.35	2.10@2.60	
Somersett mine run.....	Boston.....	1.90	1.90	1.75	1.65@2.00	
Pool 1 (Navy Standard).....	New York.....	3.25	3.05	3.05	2.75@3.25	
Pool 1 (Navy Standard).....	Philadelphia.....	3.15	3.15	3.15	3.00@3.25	
Pool 1 (Navy Standard).....	Baltimore.....	2.65	2.70	2.70	2.60@2.65	
Pool 9 (Super. Low Vol.).....	New York.....	2.65	2.40	2.35	2.25@2.50	
Pool 9 (Super. Low Vol.).....	Philadelphia.....	2.45	2.45	2.45	2.25@2.60	
Pool 9 (Super. Low Vol.).....	Baltimore.....	2.45	2.40	2.40	2.35@2.50	
Pool 10 (H. Gr. Low Vol.).....	New York.....	2.30	2.15	2.05	2.00@2.15	
Pool 10 (H. Gr. Low Vol.).....	Philadelphia.....	2.15	2.15	2.15	2.00@2.20	
Pool 10 (H. Gr. Low Vol.).....	Baltimore.....	2.20	2.10	2.10	2.00@2.20	
Pool 11 (Low Vol.).....	New York.....	1.85	1.90	1.85	1.80@1.95	
Pool 11 (Low Vol.).....	Philadelphia.....	1.85	1.85	1.85	1.75@1.95	
Pool 11 (Low Vol.).....	Baltimore.....	2.00	2.00	2.00	2.00@2.05	
High-Volatile, Eastern		Market Quoted	Oct. 31, 1921	Nov. 14, 1921	Nov. 21, 1921	Nov. 28, 1921†
Pool 54-64 (Gas and St.).....	New York.....	1.85	1.70	1.70	1.70@1.80	
Pool 54-64 (Gas and St.).....	Philadelphia.....	1.75	1.70	1.70	1.65@1.80	
Pool 54-64 (Gas and St.).....	Baltimore.....	1.75	1.65	1.65	1.60@1.75	
Pittsburgh sc'd gas.....	Pittsburgh.....	2.65	2.65	2.65	2.60@2.70	
Pittsburgh mine run (St.).....	Pittsburgh.....	2.15	2.15	2.15	2.10@2.20	
Pittsburgh slack (Gas).....	Pittsburgh.....	1.65	1.55	1.40	1.30@1.50	
Kanawha lump.....	Columbus.....	3.30	3.30	3.20	3.00@3.25	
Kanawha mine run.....	Columbus.....	2.15	2.00	1.85	1.75@2.00	
Kanawha screenings.....	Columbus.....	1.25	1.15	1.00	.90@1.10	
Hocking lump.....	Columbus.....	3.25	3.25	3.15	3.00@3.35	
Hocking mine run.....	Columbus.....	2.05	2.10	2.00	1.90@2.10	
Hocking screenings.....	Columbus.....	1.10	1.10	.95	.90@1.05	
Pitts. No. 8 lump.....	Cleveland.....	3.25	3.25	3.10	3.00@3.50	
Midwest		Market Quoted	Oct. 31, 1921	Nov. 14, 1921	Nov. 21, 1921	Nov. 28, 1921†
Pitts. No. 8 mine run.....	Cleveland.....	\$2.15	\$2.10	\$2.00	\$2.00@2.10	
Pitts. No. 8 screenings.....	Cleveland.....	1.55	1.35	1.30	1.30@1.40	
Franklin, Ill. lump.....	Chicago.....	3.75	3.65	3.75	3.25@4.05	
Franklin, Ill. mine run.....	Chicago.....	2.75	3.15	2.85	2.60@3.00	
Franklin, Ill. screenings.....	Chicago.....	1.60	1.50	1.60	1.15@2.50	
Central, Ill. lump.....	Chicago.....	2.50	3.50	3.35	3.00@3.75	
Central, Ill. mine run.....	Chicago.....	2.25	2.65	2.50	2.00@2.75	
Central, Ill. screenings.....	Chicago.....	1.60	1.60	1.35	1.00@1.60	
Ind. 4th Vein lump.....	Chicago.....	2.95	3.55	3.50	3.00@3.75	
Ind. 4th Vein mine run.....	Chicago.....	2.35	2.80	2.75	2.60@2.90	
Ind. 4th Vein screenings.....	Chicago.....	1.55	1.95	1.75	1.15@2.25	
Ind. 5th Vein lump.....	Chicago.....	2.70	3.05	2.80	2.60@3.00	
Ind. 5th Vein mine run.....	Chicago.....	2.35	2.45	2.45	2.25@2.60	
Ind. 5th Vein screenings.....	Chicago.....	1.35	1.90	1.50	1.25@1.60	
Standard lump.....	St. Louis.....	3.35	3.10	3.10	2.75@3.00	
Standard mine run.....	St. Louis.....	1.95	2.05	1.95	1.85@2.00	
Standard screenings.....	St. Louis.....	.90	.90	.95	.85@1.00	
West Ky. lump.....	Louisville.....	2.90	3.00	3.00	2.25@3.25	
West Ky. mine run.....	Louisville.....	2.45	2.00	1.90	1.75@2.00	
West Ky. screenings.....	Louisville.....	1.10	.95	1.00	.50@1.50	
South and Southwest		Market Quoted	Oct. 31, 1921	Nov. 14, 1921	Nov. 21, 1921	Nov. 28, 1921†
Big Seam lump.....	Birmingham.....	3.75	3.75	3.75	3.00@4.25	
Big Seam mine run.....	Birmingham.....	2.15	2.15	2.00	1.50@2.50	
Big Seam (washed).....	Birmingham.....	2.30	2.30	2.30	2.15@2.40	
S. E. Ky. lump.....	Louisville.....	4.00	3.90	3.60	3.00@3.25	
S. E. Ky. mine run.....	Louisville.....	2.20	2.10	2.20	2.00@2.25	
S. E. Ky. screenings.....	Louisville.....	1.30	1.45	1.15	1.00@1.20	
Kansas lump.....	Kansas City.....	5.75	5.50	5.00	5.00	
Kansas mine run.....	Kansas City.....	4.00	4.25	4.25	4.25	
Kansas screenings.....	Kansas City.....	2.40	2.50	2.50	2.50	

\*Gross tons, f.o.b. vessel, Hampton Roads.  
†Advances over previous week shown in heavy type, declines in italics.

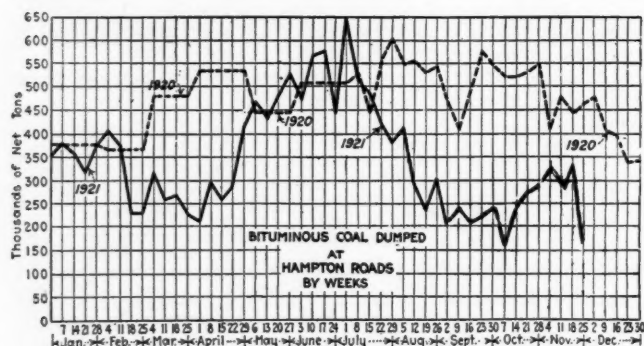
### Current Quotations—Spot Prices, Anthracite—Gross Tons, F. O. B. Mines

		Market Quoted	Freight Rates	Nov. 14, 1921		Nov. 21, 1921		Nov. 28, 1921†	
				Independent	Company	Independent	Company	Independent	Company
Broken.....	New York.....	\$2.61			\$7.60@7.75		\$7.60@7.75		\$7.60@7.75
Broken.....	Philadelphia.....	2.66		\$7.60@8.20	7.75@7.85	\$7.60@8.20	7.75@7.85	\$7.60@8.20	7.75@7.85
Egg.....	New York.....	2.61		8.00@8.40	7.60@7.75	8.00@8.25	7.75@7.85	7.75@8.00	7.60@7.75
Egg.....	Philadelphia.....	2.66		8.10@8.35	7.75@7.85	8.10@8.35	7.75@7.85	8.00@8.35	7.75@7.85
Egg.....	Chicago.....	5.63		8.00**	7.15**	8.00**	7.15**	8.00**	7.15**
Stove.....	New York.....	2.61		8.75@9.25	7.90@8.10	8.75@9.25	7.90@8.10	8.50@9.00	7.90@8.10
Stove.....	Philadelphia.....	2.66		8.75@9.00	8.00@8.35	8.75@9.00	8.00@8.35	8.75@9.00	8.00@8.35
Stove.....	Chicago.....	5.63		8.50**	7.40**	8.50**	7.40**	8.50**	7.40**
Chestnut.....	New York.....	2.61		8.75@9.25	7.90@8.10	8.75@9.25	7.90@8.10	8.50@9.00	7.90@8.10
Chestnut.....	Philadelphia.....	2.66		8.50@9.00	8.05@8.25	8.50@9.00	8.05@8.25	8.50@9.00	8.05@8.25
Chestnut.....	Chicago.....	5.63		8.25**	7.40**	8.25**	7.40**	8.25**	7.40**
Pea.....	New York.....	2.47		5.50@6.00	6.05@6.45	5.50@5.75	6.05@6.45	5.25@5.60	6.05@6.45
Pea.....	Philadelphia.....	2.38		5.00@5.50	6.15@6.25	5.00@5.50	6.15@6.25	5.00@5.50	6.15@6.25
Pea.....	Chicago.....	5.63		6.60**	5.80**	6.60**	5.80**	6.10**	5.80**
Buckwheat No. 1.....	New York.....	2.47		2.50@3.25	3.50	2.50@3.00	3.50	2.50@3.00	3.50
Buckwheat No. 1.....	Philadelphia.....	2.38		3.75@3.25	3.50	2.75@3.25	3.50	2.60@3.00	3.50
Rice.....	New York.....	2.47		2.00@2.40	2.50	1.75@2.25	2.50	1.75@2.25	2.50
Rice.....	Philadelphia.....	2.38		1.75@2.25	2.50	1.75@2.25	2.50	1.75@2.00	2.50
Barley.....	New York.....	2.47		1.25@1.50	1.50	1.00@1.25	1.50	1.00@1.25	1.50
Barley.....	Philadelphia.....	2.38		1.10@1.25	1.50	1.00@1.50	1.50	1.00@1.25	1.50
Birdseye.....	New York.....	2.47			2.50		2.50		2.50

\*Advances over previous week shown in heavy type, declines in italics.

\*\*Net tons, f. o. b. mines.

running and shippers are finding New England an increasingly difficult outlet. General cargoes are scarce and bunkering requirements are thereby reduced. Many New River mines have closed lately because of high production costs, and this may tend to check the distress tonnage at the piers.



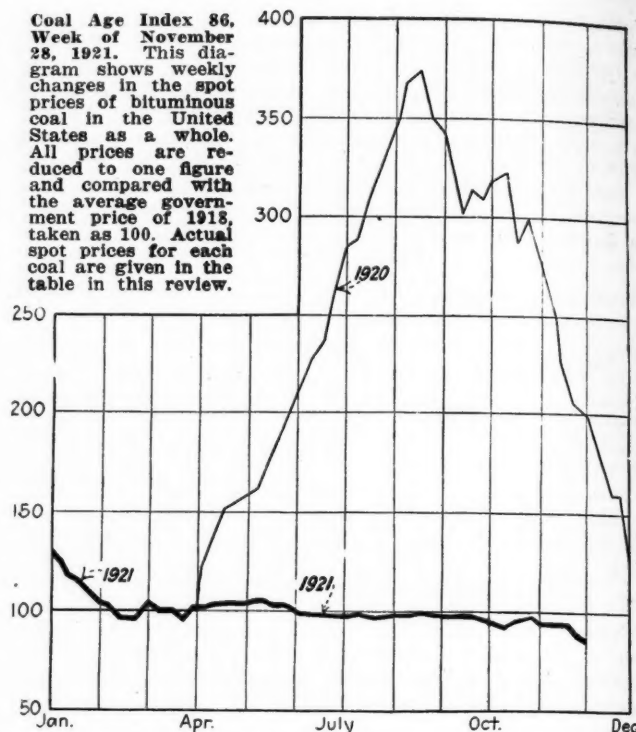
The depressed coal markets resulted in an increase of 47,017 in the number of idle freight cars on Nov. 15, compared with the total on Nov. 8. Of this increase 21,349 were surplus coal cars.

#### ANTHRACITE

Production recovered promptly after the holidays. The total output during the week ended Nov. 19 was 1,910,000 net tons, as compared with 1,942,000 in the last preceding full-time week. Retailers report their business as slowing down, while their yards are fast becoming filled. Many are already in such comfortable supply that reordering will be unnecessary until Jan. 1; perhaps even later.

The New England rail movement was 2,997 cars in the week ended Nov. 19, practically the same as during the preceding week. Lake dumpings at Buffalo were 86,600 net tons in the week ended Nov. 23, as compared with 38,300 in the previous week.

Coal Age Index 86, Week of November 28, 1921. This diagram shows weekly changes in the spot prices of bituminous coal in the United States as a whole. All prices are reduced to one figure and compared with the average government price of 1913, taken as 100. Actual spot prices for each coal are given in the table in this review.



#### COKE

Beehive coke production increased 8,000 tons to 111,000 in the week ended Nov. 19. Independent plant activity is less although the Frick company has increased its output. Demand has failed to hold firm and Connellsville prices have softened on furnace coke, which is quoted \$3@3.10; foundry is unchanged, \$4@4.50.

## Foreign Market And Export News

#### Coal Paragraphs from Foreign Lands

**ITALY**—The price of Cardiff steam first is quoted at 39s. 3d. on the Genoa market, according to a Nov. 28 cable to *Coal Age*. This is a drop of only 3d. from last week's quotations.

**GERMANY**—The production of coal in the Ruhr region during the week ended Nov. 14, was 1,835,000 metric tons, according to a cable to *Coal Age*, compared with 1,545,000 tons during the preceding week.

The total bituminous output in September was 11,607,160 tons (11,549,516 tons in September 1920); lignite, 10,358,568 tons (10,102,551 tons); coke, 2,278,047 tons (2,210,329 tons); briquets 520,560 tons (459,344 tons); lignite briquets, 2,471,189 tons (2,256,039 tons), according to the *Colliery Guardian*. The Upper Silesian production was 2,678,032 tons, as against 3,196,326 tons in September 1913. On the other hand, labor increased from 128,068 to 182,500 men.

**INDIA**—Tenders were invited, closing Dec. 1, for the supply of 100,000 tons of steam coal for the Bengal and North Western Ry. for twelve months beginning April 1, 1922. Tenders were submitted for the whole amount or for a portion only.

**HOLLAND**—The following are the latest quotations on the Rotterdam coal market: British, per gross ton, c.i.f. Rotterdam, 17.40 gulden or 30s. American per gross ton, c.i.f. Rotterdam, 23.23 gulden or \$8.

**SPAIN**—The miners' syndicate in the Colmel mining region of Asturias has announced a general strike for the end of November in protest against the prevailing conditions. Thousands of miners are without employment owing to the lack of demand for Spanish coal.

#### Notes From the British Market

The Newcastle market has been quiet. Curtailment of production has been general. Prices show a decline of from 6d. to 1s. The Norwegian State Railways have ordered 20,000 tons of steam at 22s. 11d. f.o.b.

During October the Tyne shipped 1,143,237 tons, which is 599,030 tons more than in October, 1920.

Production for the week ended Oct. 29, was 4,210,200 gross tons. During the week ended Nov. 5, the output was 4,182,000 tons and in the second week of November, 4,373,000 tons.

The Admiralty has invited Welsh coal owners to render proposals for supplies for 1922. Owing to the extensive use of oil in the Navy the quantity of

coal required for 1922 is not likely to exceed 500,000 tons. Exports are a little improved, especially to France, Italy, Egypt, India and South America. Supplies are still top heavy, owing to the domestic depression.

#### Exports Dull at Hampton Roads; Accumulations Are Diminishing; Coastwise Freights Soften

Export business was dull last week, the temporary revival recently noted failing to hold up. Movement to New England also fell off, and the total dumpings took a decided slump. Bunker business was holding its own, although general shipping is weak.

Reduced quotations are having little effect on the market. Accumulations are diminishing, indicating a hesitancy on the part of shippers to lay in more stock than for immediate needs. The faith in the market, which has hitherto been strongly in evidence now appears to be lacking.

Hampton Roads must look forward to some other outlet for coal than in foreign cargoes. For this reason the trade is much interested in the proposed construction of warehouses and piers, with its promise of increasing general shipping through this port, thereby bringing in ships for bunkers. This movement is one of the most important, from the point of view of the coal man, that has been undertaken here in years.

Freight rates to New England are showing a tendency to drop, barges and schooners being offered on the spot to Boston for as low as 90c., with correspondingly low rates for ports farther North on the coast. Foreign freight rates are at a standstill, apparently,

with variations in most cases of only 5c. @ 10c. per ton for specific spot cargoes, which are seldom offered.

## PIER SITUATION

	Week Ended	
	Nov. 17	Nov. 24
N. & W. Piers, Lamberts Point:		
Cars on hand.....	2,033	1,905
Tons on hand.....	114,431	97,820
Tons dumped.....	125,818	75,829
Tonnage waiting.....	14,500	2,200
Virginian Ry. Piers, Sewall's Point:		
Cars on hand.....	1,556	1,511
Tons on hand.....	77,800	75,550
Tons dumped.....	129,239	45,512
Tonnage waiting.....	5,198	11,500
C. & O. Piers, Newport News:		
Cars on hand.....	1,418	1,466
Tons on hand.....	70,900	73,300
Tons dumped.....	35,376	39,537
Tonnage waiting.....	3,500	1,450

## Pier and Bunker Prices, Gross Tons

(Foreign Bunker Quotations by Cable to Coal Age)

PIERS		Nov. 19	Nov. 26†
Pool 9, New York.....	\$5.55 @ \$5.75	\$5.60 @ \$5.75	
Pool 10, New York.....	5.40 @ 5.50	5.40 @ 5.60	
Pool 9, Philadelphia.....	5.50 @ 5.60	5.50 @ 5.80	
Pool 10, Philadelphia.....	5.50 @ 5.65	5.50 @ 5.65	
Pool 11, Philadelphia.....	6.00	6.00	
Pool 1, Hamp. Rds.....	4.75 @ 4.90	4.75 @ 4.95	
Pool 5-6-7 Hamp. Rds	4.25	4.25	
Pool 2, Hamp. Rds.....	4.60 @ 4.75	4.65	

BUNKERS		Nov. 19	Nov. 26†
Pool 9, New York.....	\$5.95 @ \$6.15	\$5.95 @ \$6.10	
Pool 10, New York.....	5.80 @ 5.90	5.80 @ 5.90	
Pool 9, Philadelphia.....	6.00	6.00	
Pool 10, Philadelphia.....	5.75 @ 5.90	5.75 @ 5.90	
Pool 1, Hamp. Rds.....	5.00 @ 5.10	5.00 @ 5.10	
Pool 2, Hamp. Rds.....	4.75 @ 4.85	4.75	
Welsh, Gibraltar.....	45s. f.o.b.	45s. f.o.b.	
Welsh, Rio de Janeiro.....	65s. f.o.b.	65s. f.o.b.	
Welsh, Lisbon.....	52s. f.o.b.	52s. f.o.b.	
Welsh, La Plata.....	60s. f.o.b.	60s. f.o.b.	
Welsh, Marseilles.....	125 fr. f.o.b.	125 fr. f.o.b.	
Welsh, Genoa.....	45s. t.i.b.	45s. t.i.b.	
Welsh, Madeira.....	45s. f.a.s.	45s. f.a.s.	
Welsh, Teneriffe.....	45s. f.a.s.	45s. f.a.s.	
Welsh, Malta.....	47s. 6d. f.o.b.	47s. 6d. f.o.b.	
Welsh, St. Michaels.....	60s. t.i.b.	60s. t.i.b.	
Welsh, Las Palmas.....	45s. f.a.s.	45s. f.a.s.	
Belgian, Antwerp.....	40s. f.o.b.	40s. f.o.b.	
Alexandria.....	53s. f.o.b.	49s. f.o.b.	
Bombay.....	35 rupees	35 rupees	
Capetown.....	42s. 9d.	42s. 9d.	

## C.I.F. Prices, American Coal

(In Gross Tons)

	Nov. 19		Nov. 26†	
	Low	High	Low	High
French Atlantic.....	\$8.90	\$8.70	\$8.65	\$8.85
West Italy.....	8.90	8.70	8.65	8.85
The Plate.....	9.00	8.80	9.00	8.80
Rio Janeiro.....	9.00	8.90		
Havana.....	7.00	6.75	6.95	6.70

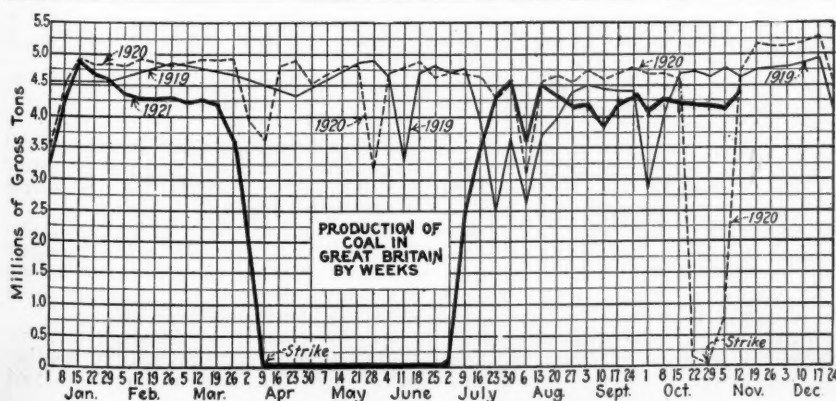
These quotations are purely nominal and as far as can be learned, no business is being done in these markets.

## Current Quotations British Coal f.o.b.

Port, Gross Tons

	Nov. 19	Nov. 26†
Cardiff		
Admiralty, Large.....	26s. 3d.	25s. 6d. @ 26s.
Steam, Smalls.....	19s.	18s. 6d. @ 19s. 6d.
Newcastle:		
Best Steams.....	23s.	23s. @ 24s.
Best Gas.....	24s.	23s.
Best Bunkers.....	22s. 6d.	21s. 6d. @ 22s.

† Advance over previous week shown in heavy type, declines in italics.



## Wage Reductions, Strikes and Idle Pits Mark Progress of British Coal Readjustments

Mines Working Less Than Four Days a Week—  
Wages Nearly Halved in Scotland and Some Other  
Fields—Operators Doubt Possibility of 20s. Coal

The British coal industry is rapidly going from bad to worse. So serious is the outlook for the miners that they called on the Prime Minister on Nov. 14 in an endeavor to obtain some sort of financial aid from the Government to keep the pits open. It was urged that the balance of £3,000,000 of the Government subsidy should be utilized to supplement the low wages prevailing. The Premier said he recognized the very serious situation in which many of the miners found themselves, but it was not possible to come to the aid of the coal industry as suggested. In the meantime, owners are asking for cancellation of that part of the Mining Act which provides for the contribution of a system of committees and boards for the regulation of wages and conditions of work in the industry.

The Scottish miners have just undergone a cut of 4s. 2d. which brings their wages down to 9s. 8d. per day. South Wales colliers lose 3s. 5d. per day, the daily wage of laborers in that district being now 6s. 5d.

A big cut in the wages of Forest of Dean miners has been decided on by the Joint District Board. The pay will now be 7s. 5d. a day, as compared with 18s. 9d. at the beginning of the year.

The management committee of the General Federation of Trades Unions says: "The miners' representatives now admit that their mishandling of the coal industry has been the cause of disaster and the preventive of quick recoveries in industry. Coal costs seriously increase our present day troubles. The scheme recently put forward on behalf of the miners (i.e. a loan from the Treasury to the mining industry) is no remedy at all. To transfer the cost from the user of coal to the taxpayer is not to reduce the cost, but to relieve the miners at the expense of other workers."

Coal owners are pressing and have received a reduction of 25 per cent in railway rates in consequence of the heavy fall in export and shipment trades.

In Durham sixty-one coal mines have closed since the beginning of the year and nine new pits have opened in the same period. An illuminating instance of wage cuts is given in the following

table which shows a comparison of the Northumberland miner's wage in October and November:

	October		November		Cut	
	s.	d.	s.	d.	s.	d.
Machine fillers.....	17	8.79	12	6.40	5	2.39
Mach. cutters.....	17	2.53	12	1.98	5	0.55
Coal hewers.....	16	2.01	11	5.13	4	8.88
Coal cutters						
(day).....	15	7.75	11	0.71	4	7.04
Timbermen.....	10	11.43	7	8.89	3	2.54
Laborers.....	9	4.65	6	7.62	2	9.03
Surfacemen						
(day).....	11	3.33	7	11.66	3	4.33
Surfacemen						
(piece).....	14	6.27	10	3.18	4	3.09
Mechanics.....	13	6.67	9	7.12	3	11.55

The severity of the cuts from January to November is shown here:

	January		November		Cut	
	s.	d.	s.	d.	s.	d.
Colliers.....	20	10.20	8	10.38	11	11.64
Laborers.....	17	9.50	6	5.37	11	4.13
Hitchers.....	18	2.17	6	9.23	11	4.94
Tinkers.....	18	11.50	7	5.97	11	0.58
Rippers.....	19	4.19	7	9.84	11	6.35
Haulers.....	19	1.86	7	7.19	11	5.67

A new agreement embodying the principles and provisions of the old Conciliation Board agreement was signed by the South Wales Joint District Coal Board at Cardiff on November 14. The schedule incorporates the terms of the national settlement and the arrangement is to run until September next, and after that will be terminable at three months' notice. An application was made by the workers' representatives for an allowance to the lower paid men. It was urged on behalf of the owners that an improvement in the trade could only be secured by reduced costs.

On an average the miners are working 3.9 shifts per week, while in many districts not more than 2 per week is the rule. The heavy fall in wages throughout Britain is indicated in the following table which shows the daily rates for collieries:

	March		November	
	s.	d.	s.	d.
Nottinghamshire.....	19	0	17	4
Northumberland.....	18	11	11	5
Kent.....	18	8	10	4
Derbyshire.....	18	3	16	9
Yorkshire.....	17	11	15	9
South Wales.....	17	10	8	10
Warwick.....	17	3	14	8
North Staffs.....	17	2	11	3
Leicester.....	17	2	14	9
Durham.....	16	6	11	3
Cannock.....	16	6	13	8
South Derby.....	16	6	13	8
Lancashire.....	16	5	11	4
Cumberland.....	16	0	9	1
North Wales.....	16	4	9	6
Forest of Dean.....	15	3	7	5
Bristol.....	14	11	7	6
Somerset.....	14	7	9	6
Scotland.....	17	0	9	8

## Export Clearances, Week Ended,

Nov. 24, 1921

FROM HAMPTON ROADS

	Tons
For Atlantic Islands	
Br. Schr. Vincent A. White, for Kingston.....	735
Nor. SS. Lom, for Kingston.....	1,008
Nor. SS. Cibao, for Kingston.....	1,019
Am. SS. Glendoyle, for Martinique.....	1,173
Du. SS. Maashaven, for Barbados.....	3,818
For Cuba:	
Am. SS. Munwood, for Havana.....	2,996
For Nova Scotia:	
Br. Schr. Majorie E. Bachman, for Halifax....	73

FROM PHILADELPHIA

	Tons
For Brazil:	
Br. SS. Balzac, for Santos.....	3,310

## Reports From the Market Centers

### New England

#### BOSTON

*Prospects Dull—Only Spotty Demand—Market Largely Restricted to Pocahontas and New River—Domestic Anthracite Somewhat Easier.*

**Bituminous**—The market continues to drag along without sign of change. Many Pennsylvania operating interests that have usually been well supplied with orders now find themselves at their wits' ends to place even a small share of weekly output. In no part of this territory is there any apparent interest in quotations; buyers find themselves well stocked with fuel for December and January at the very least, and there is no disposition whatever to make purchases for more than 60 to 90 days ahead. The trade has been hammered so hard since Aug. 19, it is by no means surprising that current prices, many of them on the very lowest level that has been obtained at any time during the fall, fail utterly to attract more than the few scattered consumers who for one reason or another did not buy when the first low figures were named. There is certainly no very encouraging outlook for steam coals in New England during what normally are the heavier winter months.

While among industries there is observed a better trend toward 1922, the improvement is so gradual that it will be a long time before any reaction on coal can be noted. In shoes and textiles there is a fair amount of business, but the machine trades, paper manufacturers, and several special lines are going through an extremely dull period. Several reorganizations have taken place among large producers and there are more than a few plants that are suffering from acute financial disability, but now that interest rates have come down there is a disposition among the banks to help along as well as may be the lame and the halt who are asking for relief. This will not extend, however, to the point of accumulating coal.

So long as all-rail tariffs remain on their present basis and there is no war to boost the value of water transportation, it is easy to see that the water route will be preferred. It is clear that the Hampton Roads agencies, drawing their supply in large measure from districts where the wage scale is usually on a lower basis, will maintain their present advantage here through the use of bottoms of relatively low operating cost. Certain of those shippers have their own rehandling plants at strategic points like Boston, Providence, New Bedford, and Portland, and in that way are the better able to move inland.

Prices on Pocahontas and New River for inland delivery are being held on a level of \$6.25@\$.65 per gross ton on cars for Navy acceptable grades, but occasionally a lower price is still heard. Since a general move was made to curtail production, especially in the

New River district, there have been fewer offerings of distress coal at railroad berths to be absorbed inland, and it is a fair deduction that the current market is in that much better position.

The number of coastwise charters being made is quite limited, but rates seem to have changed in no particular. Commitments are made only from trip to trip, for no shipper is able to plan disposition more than a fortnight or so in advance. Large sailing vessels, 3,500 tons and upwards, together with some of the larger barges that are restricted to deep-water berths, almost go begging at 85c., Hampton Roads to Boston or Portland, the low rate that has been obtainable now for more than 60 days. Smaller craft naturally command somewhat higher rates, \$1@\$.110 having been paid, but most of these latter are for wharves where delivery is made direct to consumer or to the smaller retail dealers, and in places east of Boston where less water is available.

**Anthracite**—Shipments are coming forward in such heavy volume that the pressure to get stove and chestnut is beginning to relax noticeably. Mild weather prevails, and unless we are to have three or four weeks of steady cold it may be expected there will be signs of easing up, temporarily. The demand in the fore part of the winter is to be largely dependent upon the weather; after that it will be interesting to observe the early stages of the expected discussion of wages at the mines.

### Tidewater—East

#### NEW YORK

*Warm Weather Affects Anthracite Demand—Independent Prices Suffer—No Tendency Toward Revival in Bituminous—Market Sluggish—Heavy Distress Tonnage Being Worked Off.*

**Anthracite**—Warm weather has had its effect on the anthracite trade. So marked has been the depression that only a long period of low temperatures can restore some sizes to a healthy basis.

The present slowing down is looked at quite calmly by retailers as they have gone through many similar occasions. With the coal burning season young, conditions may change for the better on short notice. The trade could be worse and has actually been so many times—the difficulty being that dealers have grown accustomed to brisk demand during the years of the war.

When the weather is mild the retail dealers usually have a breathing spell before the winter rush begins. That seems to be just what is happening now, and the slow-down is actuated by unemployment and business conditions generally, which make people more reluctant than ever to buy necessities before they really are needed.

Independent stove is down to about \$8.75 maximum, when sold in conjunc-

tion with other sizes, and some operators are offering it at \$8.50 if the buyer will take a fair proportion of egg or pea. Chestnut is also quotable \$8.50 @\$.875. Egg is, harder to move than ever. Pea has also weakened.

A serious oversupply exists in buckwheat, which is more responsive to weather changes than the other steam sizes. Loaded boats and tonnage on demurrage at the piers are being sacrificed. The market on rice is \$1.90@\$.25, and on barley \$1@\$.135.

**Bituminous**—No tendency toward revival has been noted, the market remaining in the same sluggish condition as for some time past. A certain amount of business is being done right along, but the buying power is too feeble to give any buoyancy to prices or even sustain them at former levels.

At Tidewater this is particularly true, where the pressure to sell demurrage coal has brought about a state of demoralization even worse than that existing during the summer. Sending coal to Tide in advance of sale was then rarely indulged in, with the result that the market was comparatively free of distress coal.

But with the appearance and disappearance of the strike scare, this condition changed. More or less coal was shipped on consignment, while the accumulation was added to by the arrival at the piers of tonnage shipped on orders that were canceled after the coal left the mines. The quantity was not large enough so that it would have proved troublesome in a fairly active market, but it has been a burden in view of the prevailing stagnation.

Things were exceptionally slow in November because of the manner in which deliveries were speeded up during the second half of October. But consumers who have been out of the market cannot stay out indefinitely, and as stocks become reduced some recovery in the demand is inevitable.

With the end of the year approaching, however, they are expected to limit their purchases to correspond pretty closely with current needs, in order to conserve funds and make a strong cash showing in inventories.

#### PHILADELPHIA

*Anthracite Displays Further Weakness—Dealers' Stocks Heavy—Retail Prices Soft—Steam Sizes in Light Demand—Bituminous Slow—Quality Coals Only in Demand.*

**Anthracite**—Retail business is flat and dealers are at a loss to recall a parallel situation within the last ten years. There is no longer a question as to the cause of the lack of buying and that is, that the consumer is short of money and is husbanding such resources as he has to the utmost degree. Most of the business that now comes in is for small lots.

However, despite the inability of certain dealers to induce trade by reduced prices, the number who are more or less openly offering them increases, and the average for stove and nut is nearer \$14 now rather than \$14.50, and seems likely to go lower.

The week has seen much cancellation of orders and most of the independents are now offering all sizes, but among the larger shippers in this class there is yet no price concession offered.

At this time it would seem that nothing but some unusual wintry weather will revive the industry, and the fact

must be faced that Philadelphia rarely sees any rigorous weather much before the end of the year. At this time every dealer has enough coal in his yard to go right through until the first of the year.

So far the collieries have not lost any working time account of the easing off of trade, but nevertheless this is imminent, particularly among the independents, who are already getting an accumulation of coal behind the scales, especially egg and pea.

Steam sizes are in worse shape than any time this season, only barley being active in any degree, and with more than enough to fill all demands on this size. There is no difficulty to get a cut of 25c.@50c. on any of the independent steam sizes. The companies hold firm on prices, preferring to store rather than reduce the schedule.

**Bituminous**—Consumer conservatism is the prevailing note. Even the railroads which heretofore have been fair buyers seem to have eased up a bit, feeling that they stocked heavier than they ordinarily might have done. As is always the case in a buyer's market, there is the strongest kind of a demand for quality.

There are still plenty of instances of the producer of even good coals anxious to increase tonnage who will take an occasional flyer of a low price to close desirable business, but on the whole quotations have varied but little, although there is still a downward tendency to be noted. Nothing like a firm tone in this respect is expected before a spell of severe weather converts the buyer into a belief of a possibility of slow rail deliveries.

The Tide trade remains unchanged. There is some bunkering, but no activity, as there seems always plenty of coal on hand to meet the calls that come in.

## BALTIMORE

*Continued Unsatisfactory Conditions for Bituminous—Demand Abnormally Low—Anthracite Supply Gains with Warm Weather.*

**Bituminous**—Reports from the local trade and producing sections which ship to this point show that the demand for soft coal of all kinds continues abnormally low and that many operators are not only selling below actual production cost but are running their mines on a basis as low as any operation at all will permit. It is hard to figure how general business, even in such a dull time as the present, is able to make out without more coal than is moving at present.

The only bright spot is that when business improves there must be a heavy purchasing almost from the start, as industries have been proceeding in the majority of cases without stocking up fuel for future needs. A break in the unusually warm weather for the season will also play a heavy part in the price conditions, as there is no reserve at this point to call upon if winter snows and freezes tie up traffic. It would not be at all surprising to a majority in the trade here if one or both of these causes sent the market up with a run the first of the year.

The price on line business continues poor, the best grades of steam coal offering at \$2.35@\$2.50 in the majority of cases, with some of the more restricted lines of Pool 1 ranging \$2.60@

\$2.65 per net ton, f.o.b. mines. Poorer steam grades continue in little demand and are offering freely at \$1.75@\$2.15. Best grades of gas lump are on the market around \$2.35@\$2.50, also, and mine run is offering with but few takers at \$2 and less.

Bunker trading at this port is not at all brisk, best grades of both gas and steam coals are \$5@\$5.15 per gross ton, f.o.b. piers, before trimming. The export situation is a little brighter and November will show a fair increase over October. There is no healthy line of inquiry for the future, however, and export interests are by no means oversanguine.

**Anthracite**—Continued warm weather over the month of November is having its effect on the hard coal situation at Baltimore. The November run of coal here was short of the deliveries of October, but the lessened consumption and light calls from the purchasing public have enabled the majority of yards to maintain a fair reserve.

The shortage from normal supply here at this time is probably still around 100,000 tons, but unless severe weather is encountered in the near future this shortage will be made up to a considerable extent before the first of the year.

## BUFFALO

*Small Demand for Bituminous—No Change in Situation—Anthracite Only Fairly Active.*

**Bituminous**—It is still reported that the trade in general has not yet recovered from the reaction of overstocking when it was feared that the miners were going to strike. There is coal on track at terminal points that was turned out some weeks ago and some of it is selling very low.

It is only the shipper who has a well-established trade that can say he is doing much now and he has to work hard for what he gets. Of course it is the shipper who has held his old customers pretty firmly who is going to go ahead fastest when the demand becomes normal. He has kept his men on the road when they did not earn their railroad fare and he is in about as close touch with the consumer as he ever was. Bituminous coal prices are unchanged.

**Anthracite**—Demand is fair but does not appear to be as heavy as it was. The weather has not favored buying and as there is no special urgency the consumers seem to have come to the conclusion that they can buy when they need coal and not hurry. The independent mine price is usually a dollar or so over circular and it is likely to go up rather than go down.

Lake shipments are still light, being 85,600 tons for the week ended Nov. 23, of which 26,000 cleared for Duluth and Superior, 23,700 for Milwaukee, 15,200 for Fort William, 7,200 for Sheboygan, 7,000 for Manitowoc and 6,500 for Chicago.

**Coke**—Most of the furnaces are idle or making their own supply through auxiliary local byproduct plants. Jobbers get some business in case a special make is wanted, being given the following oven prices as base: \$4.15 for 72-hr. Connellsville foundry, \$3.15 for 48-hr. furnace and \$2.75 for stock.

Bituminous coal prices are: \$2.75 for Youghiogheny gas lump, \$2.50 for Pittsburgh and No. 8 steam lump, \$2.25 for Allegheny Valley and all mine run, \$1.50@\$1.75 for slack, adding \$2.36 to Allegheny Valley and \$2.51 to other coals for freight.

## Northwest

### DULUTH

*Zero Weather Arouses the Market — Many Rush Orders—Retail Prices Cut —Lake Receipts Dwindle.*

Eleven degrees below zero, and a blanket of snow have done their bit at the Head of the Lakes in helping the coal trade. Docks and local retail dealers have been literally flooded with orders overnight.

Following the depression which was noted last week, retail dealers announced a cut in rates ranging from 65c. to \$1.05 in bituminous. The break is attributed not only to slow sales but also to large accumulations and the certainty that the carry-over will be large.

Youghiogheny and Hocking lump have been cut from \$8.80 to \$8.25; run-of-pile from \$8.30 to \$7.25, and screenings from \$6 to \$5. Smokeless screenings have been marked down from \$8.30 to \$7.30. Hard coal retail prices are unchanged with the exception that buckwheat has been dropped from \$10 to \$8.50. The dock men are holding prices firm in spite of the retail drop.

Damaged screenings are moving at \$2.50 and some few docks are selling regular screenings at \$3 in order to move stocks. Other docks which are short are taking this opportunity to cover and the slack is being taken up. Buckwheat is a drug on the market and is being offered at prices of \$6 and below, from list of \$8.50.

A sheet of ice on the harbor has sounded the warning that shipping will soon end. Only ten cargoes were received here last week of which four were anthracite, and fourteen are reported on the way of which four are hard coal.

### MINNEAPOLIS

*Cold Weather Stimulates Movement—Bad Weather to Test Traffic Facilities —Small Orders the Feature.*

Cold weather has served to stimulate the movement to the interior. October had seen a good tonnage, which fell off as soon as it was seen that there would be no rail strike. November had considerable snow and several sharp mornings when the temperature went well below freezing. Despite the backward tendency as to buying these were hints which caused orders to be placed.

The frequent snows will speedily put to test the efficiency of the railroads as to maintaining traffic operation. So long as there were no weather handicaps it was evident that with the limited tonnage moving the roads were equal to holding up to all offerings of freight and more. But it has been constantly predicted that the better situation was due to good weather and limited loads.

If snows continue as freely as they have for some days, it will soon show whether railroad men have "gone soft" completely in the matter of keeping the lines open. Many have thought that the coddling of Government control, with high wages and overtime and advanced titles for the work formerly done at less wages, all tended to make them incapable of measuring up to the capacity of private management of the old days.

The market on screenings has been fairly steady although not firm, due to

the limited volume available. The mild weather has given a steady outlet for them in this territory. Now that colder weather has prevailed, the larger sizes will be more in demand and the production of screenings will be increased.

The cold weather will test out the opinions of some in the wholesale trade that it will not take long to brace the market. Some have had a range of prices higher than others were quoting. Naturally this meant very little business but the holders insisted that they would get their price when cold weather struck, while the competitors would have sold considerable tonnage at a price which they regarded as cost or less.

Others fear that the general commercial depression is such that there will be at all times such competition for business that prices will have hard work to show any advance, despite the natural pressure when the demand picks up. It will turn upon how much the demand actually does pick up. Buying is apt to be confined to small orders, single tons or less at retail; small cars at wholesale, and less than the usual amount to the steam trade.

Cold weather will mean that they will come along twice as often as when larger orders were placed, but the financing will be that much easier to the buyer, while the seller will turn over his money quicker, and will be that much better off,—all but the dock or mining concern, which will be up against the usual situation of being asked to deliver coal instant to offset constant delay by the purchaser in placing his order.

### MILWAUKEE

*Market Continues Dull and Depressed—Demand Fluctuates with Weather—Cargoes Still Arriving.*

Dealers without exception report a dull and depressed market. The recent slight shading in anthracite had little effect in the way of stimulating buying, and the market continues to be governed solely by weather conditions.

Hard coal prices are not uniform. There is a variation of 10c. in the retail price of stove size, and 20c. on pea. This slight difference is maintained by only a few firms, however. The soft coal market is extremely inactive. Yards are well stocked, and very little coal is moving to the interior. Cargoes are still coming, however, and what the docks cannot take will be held afloat.

November Lake receipts thus far aggregate 94,579 tons of anthracite, and 212,108 tons of soft coal, against 88,355 tons of the former, and 277,029 tons of the latter last year. Quite a number of steamers are booked to deliver cargoes before the season closes.

The following are the rates current on both hard and soft coal:

BITUMINOUS		
Splint or Yough. lump.....	\$8.00	\$9.25
Splint or Yough. lump, pile run.....	7.25	8.50
Splint or Yough. lump screenings.....	6.25	7.50
Hocking or Pittsburgh lump.....	7.75	9.25
Hocking or Pittsburgh pile run.....	7.00	8.25
Hocking or Pittsburgh screenings.....	6.00	7.25
Pocahontas lump, egg and nut.....	13.50	
Pocahontas mine run.....	8.50	9.75
Pocahontas screenings.....	7.25	8.50
Illinois and Indiana lump.....	7.50	9.25
Illinois and Indiana screenings.....	5.50	6.75
Sm'thing.....	10.00	12.25
ANTHRACITE		
Egg.....		\$15.70
Stove.....		16.10
Chestnut.....		15.95
Pea.....		14.20
Buckwheat.....		11.50

## Inland West

### ST. LOUIS

*Mild Weather Holds Up Everything—General Situation Is Extremely Discouraging—Steam Shows Improvement in Screenings Only.*

The local situation is a hard one on the retailer. The warm weather has practically stopped even the small orders. It is going to take a couple of good weeks of stiff weather to put the retail business where it ought to be at this season. Scarcity of money and non-employment is the chief excuse for buying in small lots. Every retail yard in St. Louis is loaded with coal.

Screenings are fairly active but the demand is so light that the scarcity has not brought about the advance that would usually be expected. In a general way industrial plants are not running full. The situation is one that is discouraging to both retailer and shipper and especially so in view of the fact that the retailer has all his capital tied up in storage coal and the operator has all the storage coal that the railroads will allow him to hold in their equipment at the mine.

### CLEVELAND

*Coal Trade Still in Dumps—No Early Improvement Seen—Industrial Demand Depends on Trend in Steel Industry.*

The coal trade sees only one coming development which may be depended upon to stimulate the demand. That is the renewed buying in anticipation of the wage struggle at the mines. This influence, of course, will not become effective until early next year. Any clear indications of the likelihood of a strike undoubtedly will start a buying movement against the eventuality of a mine shutdown.

In the meantime, little is expected in the way of renewed buying on any considerable scale from industries, although the present extreme slump, due to buying against the recent strike threats, probably will become less acute as accumulated stocks wear down. In other words, the industrial situation in this district probably will hold its own for the rest of the winter.

The iron, steel and allied industries, the overwhelming enterprises in and around Cleveland, are still running at about 50 per cent of capacity, but are not making much headway in pushing above that mark. Better buying by the railroads is one of the most encouraging features in the steel outlook, and leaders in the industry are convinced that 1922 will bring a good year in most products and possibly all. If the upturn in iron and steel comes on schedule next spring it will stimulate the coal trade and in the event of a looming coal strike something near to a scramble for coal might develop. For the moment, however, there is little cheer in the situation. Spot coal is moving slowly and when it does it is at distress prices, which operators contend do not establish a market. It is highly significant that contract coal is going at somewhat better quotations. The Lake season virtually is at an end. The retail trade remains quiet, with dealers stocks large and price concessions being offered here and there.

Bituminous coal receipts for the week

ended Nov. 19, took a severe slump, being almost 1,000 cars less than in the preceding week. Total arrivals amounted to 1,134 cars; divided, 759 cars for industry and 375 cars for retail yards.

### DETROIT

*Bituminous Still Finding an Irregular Market—Incoming Shipments Are Small—Bargain Lots Sought.*

Bituminous—Sales continue discouragingly small. Jobbers and wholesalers had expected a broader demand would develop with the coming of winter. Consumers of steam coal, however, are adhering to a hand-to-mouth plan of purchasing.

With factories and industrial plants running on production schedules much below their normal capacity, coal requirements have been largely reduced. This makes possible an irregular system of buying in small lots.

Buying in the domestic market is falling short of expectations. Stocks in retail yards have not been reduced to the extent the dealers had anticipated, and they are showing no disposition to add to their supplies.

West Virginia lump is quoted \$3.15@ \$3.25; egg, \$2.50; mine run, \$2; nut and slack, \$1.25. Ohio lump is \$3@ \$3.25; egg, \$2.40; mine run, \$1.90; nut and slack, \$1.15@ \$1.25; Pittsburgh No. 8 inch and a quarter is \$2.40; three-quarter lump, \$2.35; mine run, \$2.15; nut and slack, \$1.65. Smokeless lump and egg is \$4.75; mine run, \$2.65; slack, \$1.60.

Anthracite — Household consumers are buying more sparingly than in previous years. The extensive unemployment and the high retail prices, \$14.50@ \$14.75, are influences curtailing business.

### COLUMBUS

*No Increase in Demand—Steam and Domestic Stocks Are Heavy—Prices Are Still Weaker.*

Little change has taken place during the past week. With warm weather prevailing retail business is slow. Dealers are only selling a small percentage of the usual tonnage for the time of the year and are not coming into the market to replenish stocks.

Retail prices show a tendency to soften but this is not material. Hocking lump retails \$6@ \$6.50 while West Virginia splints are \$7.25@ \$7.75. Pocahontas lump is \$8.75@ \$9.25. Anthracite is fairly strong around \$15 and domestic coke is \$11.50.

Steam business is probably the weakest point in the market. While the reduction in the amount of lump produced as reduced screenings, still prices have not advanced. This is due to lack of demand. Manufacturing concerns are well stocked with adequate reserves. Ohio screenings are selling as low as 90c. and in some instances distress coal is going even lower. Mine run also shows a decline.

No date for the official closing of Lake navigation has been fixed. The T. & O. C. Docks at Toledo during the week ended Nov. 19 loaded 15,279 tons, making a total of 1,078,264 tons for the season. The H. V. Docks during the same week loaded 60,346 tons as compared with 97,696 tons the previous week, making a total of 4,454,172 tons for the season.

Production in Ohio fields is at a

rather low point. Many mines have been closed down entirely while others are working a day or two each week. The Hocking Valley output has been less than 25 per cent while the same figures prevail for Crooksville, Cambridge and Pomeroy.

### CINCINNATI

*Mine Closings Fail to Rally Prices — Distress Tonnage Increases — Retail Prices Also Softer.*

In the face of reports that many mines have closed and will stay closed for some time, there was no rallying of the market this week. Even the retail market showed the effect of the accumulation of coal. Cancellations and rejections, now called in trade parlance "hold-ups," continue with increasing frequency.

Smokeless lump was quoted at \$4.25 but sales agents were willing to take \$4 and cars in distress sold as low as \$3.75. Mine run dropped to \$2.50, although the low for distress stuff seemed to be \$2. Slack was fairly strong, because of the small make of prepared, and was held at \$1.25.

Some bituminous mines were quoting \$3@3.25 for lump. Others sold down to \$2.25 for soft gas offerings. Mine run had a wide range with \$1.15 as low for accumulated coal and the top around \$1.50. Slack sold 75c.@\$1.15, the West Virginia offerings for the first time in months seeking the level of the Kentucky tonnage.

Retail prices were off 25c. Smokeless lump ranged \$9.25@\$10; mine run \$7@7.25 and slack \$6. Bituminous lump was \$7@7.25; mine run \$5.50 and slack \$4@5.25.

### South

#### LOUISVILLE

*Mild Weather Curtails Domestic Demand—Industrial Situation Unsatisfactory—High-Scale Mines Closing.*

Business is certainly "shot" at the present time due to general lack of demand. Operators who have unionized mines are having trouble in competing with those in eastern Kentucky and West Virginia that are not organized and have reduced wages.

The best eastern Kentucky lump in October was selling up to \$3.75@\$4, with some sales at \$4.25. Today practically the top price is \$3.25, with the bulk at closer to \$3. Many mines are down and others are closing daily. The higher wage scale paid in southeastern Kentucky makes it impossible for the Harlan, Straight Creek and Jellico fields to compete profitably.

It is a case where the buyer is writing his own ticket, and where operators either have to accept the price offered, or close down and await a more favorable time. Retailers are selling very little coal. Industrial demand is dull. Production on a capacity basis grew by such leaps and bounds during the war that competition is very keen.

#### BIRMINGHAM

*Market Extremely Dull—Weather Unfavorable to Movement of Household Fuel—Quotations Firm.*

The trade is experiencing the most acute period of dullness that has obtained in the past six or eight months.

Sales agents are receiving practically no inquiry and salesmen report that it is impossible to interest their customers in buying coal in any quantity. Consuming interests seem to be averse to laying in any stocks during the balance of this year, there being some intimation along the line that after the first of the new year buying will be on a little more liberal basis.

Little acceleration of movement is expected prior to the holidays, as it is thought that there will be slight interference with the half-time operations now being carried on in the commercial field and little voluntary idleness to hinder ample production for the needs of the trade. Quotations are shown in the Weekly Review.

Domestic buying is at a standstill and will remain so until continued cold weather sets in. Retailers are stocked up and there is little outlet for current production.

### Southwest

#### KANSAS CITY

*Retail Stocks Heavy and Trade Light—Screenings Short—National Organization, U. M. W., Gains Ground.*

Conditions are the reverse of what might be expected at this season of the year bearing in mind the light production during the summer and fall. Retail dealers are loaded to the guards and a greater part of their working capital is tied up, and collections for the coal is slow.

The situation is further aggravated by a scarcity of steam grades resulting from little or no demand for prepared sizes. Illinois screenings took a jump to \$1.90 and are scarce at that figure. Slack is plentiful at Kansas mines and the price remains steady. This district produces less prepared sizes than most fields and is not affected so much by the decrease in demand for lump and nut.

The Kansas mines are gradually resuming work and the outlaw strike seems to be exhausting itself. President Lewis has had his workers in the field and as Howat is in jail they have made progress. The national organization of the U. M. W. has been steadily gaining ground over the Howat organization. Prices are as follows: Northern Missouri lump, \$4.75; mine run, \$3.50; washed slack, \$3.25; raw slack, \$2.50. Arkansas lump is \$7@7.50; mine run, \$3.75@\$4.25; slack, \$2.50. McAlester lump is \$8.50; nut, \$7; slack, \$2.50. Springfield district Illinois lump

is \$3.50@\$3.75; egg, \$3@3.25; slack, \$1.90, and Franklin County lump is \$4.25; egg, \$4.05.

### West

#### DENVER

*Strike Fails to Hamper C. F. & I. Mines—Fremont County Operations Closed—Wage Reduction Application Withdrawn.*

Miners in southern Colorado have reduced production, following the walk-out Nov. 17, but the end of the first week found them unable to close down the eighteen mines of the Colorado Fuel and Iron Co. The sympathetic strike involving about 600 men in the Fremont District was so complete, and came at a time when production was so small, that the company decided to close these mines down indefinitely. No violence has occurred.

About 1,700 men were first involved, and at the close of the week about 90 per cent of them were working. There are still many loaded cars on track at the Fremont County mines, where the bulk of domestic coal comes from.

Miners are showing considerable interest in the announcement that the Keystone and Pike's Peak companies, operating in El Paso County, withdrew their applications for a 20 per cent wage cut filed with the industrial commission Sept. 26, which should have been acted upon by Oct. 26, but was not.

#### SALT LAKE CITY

*Wintry Weather Coincident with Price Drop—Retailers in Stiff Competition—Wage Cut Predicted.*

The first touch of wintry weather was coincident with the announcement that prices were to be lowered. Lump may now be had for \$8.25, instead of \$9.50, and other grades are reduced in proportion. Ogden dealers are conducting a price war.

One of the biggest concerns in the state announces the following as its new schedule at the mine: lump, \$4; egg or stove, \$3.50; nut, \$3; screened slack, \$1.75; straight slack, \$1.25. Competitive feeling has been rather strong of late among the producers and the belief is expressed that prices will go still lower. According to an official of one of the leading operations, an effort will probably be made to get the miners to consent to a reduction in wages.

## News

### From the Coal Fields

#### Northern Appalachian

##### PITTSBURGH

*Market Continues Stagnant—Check-Off Decision Awaited—Prospects of Wage Scale Liquidation.*

Sustaining of Judge Anderson's decree would probably mean a strike, and

the expectation in coal circles is that the injunction will be sustained. Consumers show no interest in the matter by way of buying, for the market is altogether stagnant. Even sales of gas coal are quite limited.

A very moderate rate of operation is maintained, probably between 30 and 40 per cent, chiefly on contracts. Even the adjacent non-union districts, which

have been getting the major part of the business this year, are experiencing a smaller demand than a month ago. As to the steel industry, the best that can be said of it is that its rate of operation has not decreased in the past thirty days.

There is more or less gossip about the impending wage scale negotiations, to begin next February for the period from April 1. The view that the men would make a strong contest against any reduction, by demanding an actual advance, is much less prevalent than a couple of months ago, many observers now thinking that a moderate liquidation in the wage scale will be effected without much difficulty.

Slack continues quotable at \$1.30@ \$1.50, being sacrificed as it has to be produced in filling screened coal contracts. Other grades are quotable at little more than asking prices, there being few actual sales: Mine-run, \$210 @ \$2.20; 3-in., \$2.60 @ \$2.70; 14-in. domestic, \$2.90 @ \$3.25, per net ton at mine, Pittsburgh district.

#### UNIONTOWN

*Frick Operations Increased — Coke Market Is Weaker—Sluggish Coal Demand.*

Operations of the Frick company continue to advance steadily although the furnace coke market and independent plant activity remains at the point struck several weeks ago, when buying was suddenly suspended in some cases or sharply curtailed in others.

The Frick company now has a total of 3,014 ovens in blast, all being at plants where the ovens are mechanically operated. The ovens burning are Calumet, 150; Collier, 200; Continental No. 1, 300; Hostetter, 260; Leisenring No. 1, 300; Leisenring No. 2, 200; Leisenring No. 3, 200; Lemont No. 2, 150; Standard, 100; York Run, 300; Youngstown, 150 and Colonial No. 1, 124.

Three dollars seems to be a firm figure for what furnace tonnage is moving but some operators are holding coke for price. The foundry market is quoted \$4 @ \$4.50 with indications of weakness.

The coal market likewise is sluggish. Thick seam coal is \$1.75 @ \$1.80, with \$1.45 @ \$1.50 for the thinner seams.

#### CONNELLSVILLE

*Demand Fails to Increase—Prices Are Softer—Steel Corporation's Production Increases.*

There has been a continued absence of coke demand. Idle merchant furnaces are indisposed to go into blast at this time, for furnaces that recently blew in are unable to ship all their current make, the consumption of merchant pig iron having evidently decreased in the past month or six weeks. The furnaces in operation seem to be fully supplied by their contracts, and thus there is no opportunity to sell furnace coke in any tonnage.

The decreasing production of merchant coke in the past three weeks has done no more than restore the balance between production and consumption, if it has done as much as that, while there remains a considerable accumulation of coke on track. There is no demurrage piling upon this coke as the cars are left on oven sidings, but if the railroads should get short of cars the coke would

be hauled on railroad lines and demurrage would then begin.

The spot furnace coke market is a shade softer, with reports that \$2.90 can be done, but there is question whether the price applies to standard grade. Foundry coke is in extremely light demand, and consumption has evidently decreased in the past few weeks.

The market is quotable \$3 @ \$3.10 for spot furnace and \$4 @ \$4.50 for spot foundry. No contract market has been developed. The remainder of the year would not constitute a contract period, while there has been little negotiating for next year. The Trumbull-Cliffs Furnace Co. is inquiring for 18,000 tons a month, beginning Jan. 1.

The *Courier* reports production in the week ended Nov. 19 at 35,340 tons by the furnace ovens and 33,340 tons by the merchant ovens, making a total of 68,680 tons, an increase of 6,150 tons, the increase in the furnace oven production being confined almost entirely to the Steel Corporation.

#### CENTRAL PENNSYLVANIA

*Reduction in Tonnage Mined — Operators Refuse to Collect Strike Assessment.*

Production remains about stationary. The month's output, up to and including Nov. 20, amounted to 38,097 cars. This is a reduction over the month of October, the daily average being 2,367 as against 2,381.

Acting under the advice of counsel, the operators, who are members of the Central Pennsylvania Coal Producer's Association, will refuse to collect a special assessment of \$1 a month placed on the miners by the United Mine Workers for the months of November, December and January.

The assessment was levied to replenish the treasury which was greatly depleted by the strike in Mingo County, W. Va., and in Alabama. A special assessment is not a part of the check-off agreement.

No statement has been received from U.M.W. officials as to what stand will be taken on the refusal of the operators to collect the assessment.

#### EASTERN OHIO

*Production Again Declines—Industrial Stocks Topheavy—Domestic Demand Weak—Prices Off.*

A further slowing down is reflected in production for the week ended Nov. 19. The tonnage mined amounted to 383,000, or 61 per cent of rated capacity. This is 10 per cent lower than the rate during the preceding week. The association mines worked about 50 per cent of worktime and produced approximately 55 per cent of rated capacity.

Cumulative figures for the year show that this field has produced 16,546,000 tons as against a potential capacity for this period of 28,671,000 tons. About 56 per cent of the potential capacity has been produced, based on railroad ratings.

The volume of tonnage mined for railroad fuel account has not abated but, on the contrary, is somewhere between 40 and 50 per cent of output at the present rate of production.

During the past ten days industrial demand has retrogressed almost to the vanishing point. It is predicated that, under the present condition of manufacturing plants being well stocked as

a result of the recent strike scare, and their fuel requirements being subnormal, little or no improvement can be expected from this quarter until after the first of the year. Industry generally throughout this section is barely holding its own, and traffic on the railroads has receded since the passing of the recent anticipated labor difficulties.

In the Lake trade there are no developments of any particular interest as the end of the season is rapidly being approached. There are some 3,000 cars on hand at the lower docks with the number of cars in transit decreasing daily and the cleanup of the season will be made shortly after Dec. 1. Indications are that the total movement for the season will be close to the 1920 total.

Retail yards are well stocked in anticipation of winter, but the continued mild weather has retarded increased demand from consumers. Furthermore, the supply of natural gas continues ample in many communities, and it is not expected that there will be a change in the retail situation until severe weather.

With the lethargy that exists in industrial demand, prices on spot coal have succumbed to weaker tendencies.

#### ANTHRACITE

*Holiday Again Affects Production—Demand Slightly Decreased.*

As usual something seems to interfere with the production of anthracite each week. Thanksgiving Day caused the mines to be closed throughout the region and in some cases caused a slack Friday.

It is probable that the number of holidays that have been taking place in the anthracite field during November has offset the slightly lessened demand for coal. All of the mines have been working full time with the exception of the holidays.

#### FAIRMONT AND PANHANDLE

*Weaker Markets Depress Prices—Cancellations General—R.R. Fuel Production Maintained.*

##### FAIRMONT

Aside from railroad fuel there was little coal produced during the week ended Nov. 19. Western shipments were at a minimum, a weak market in that section resulting in many cancellations. Even prepared coal was softer, ranging \$2.50 @ \$2.75; mine run was \$1.45 @ \$1.75 and slack \$1 @ \$1.55.

##### NORTHERN PANHANDLE

The market was very inactive especially insofar as the West was concerned and production suffered slightly. The output of railroad fuel was sufficient to maintain the output at only 50 per cent of capacity. Demand for prepared sizes slumped so that about the only outlet was to Northern points.

#### UPPER POTOMAC

*Sluggish Market Continues — Production Rate Unimproved.*

Dormant markets continued during the week ended Nov. 19. With the extremely low prices it was impossible for mines to resume operation and only those few who had contract orders were running. Some Big Vein coal was being produced, however, and a few mines in Tucker County were operating, but elsewhere there was not much mine activity.

## Middle Appalachian

### LOW-VOLATILE FIELDS

*Domestic Demand Weaker—Operators Hard Hit—More Mines Closing—Shortage of Cars.*

#### NEW RIVER AND THE GULF

New River production was reduced to the very minimum during the week ended Nov. 19. Additional mines closed during the week, among them 14 operations of the New River Coal Co., which threw 3,000 miners out of work. Tidewater inquiries carried such low prices that few orders were accepted. With the smaller production of lump, which went to Western markets, nut and slack were a little stronger.

Cancellations materially reduced the Gulf output which was much below recent weeks. These cancellations affected Western shipments principally, although Tidewater shipments also were being curtailed. Prices under such conditions were soft, only lump being salable on a spot basis.

#### POCAHONTAS AND TUG RIVER

By requisitioning empties from the Pennsylvania and other roads the N. & W. succeeded in reducing a car shortage in the Pocahontas field during the week. These losses, however, were still heavy and about equal to those from "no markets." Tidewater business was small, the bulk of production moving West, where the lump demand had slumped a trifle. It was difficult to market other grades so that contracts after all, constituted the majority of the business.

Tug River production was limited to about 83,000 tons, both "no markets" and railroad disability being responsible for the curtailment of production. Western movement was the best, there being no demand at Tidewater. Prepared demand was also decreasing. Some of the larger mines shipped heavily to steel companies.

### HIGH-VOLATILE FIELDS

*Production Drops — Poorer Markets — Car Shortage More Apparent—Heavier Distress Tonnage.*

#### KANAWHA

With cancellations more or less general it was inevitable that production should undergo a decrease during the week ended Nov. 19. There was a good deal of distress coal on the market, resulting from operators shipping on consignment. This depressed prices further as the spot demand was unimproved.

#### LOGAN AND THACKER

Logan producers were handicapped by poor transportation facilities. Not more than 40 per cent of capacity was being produced, although mines had orders for more coal than that. Demand was by no means general and was not strong enough to harden prices. There was a fairly large tonnage of mine run moving on contract and prepared sizes sold well on the spot market.

Williamson production suffered a decline, largely because of a suspension of Western orders. The output was

not over 80,000 tons, with "no markets" still in excess of 100,000 tons. A car shortage also interfered with production to some extent. Railroad fuel shipments were a trifle stronger and mines worked about three days.

#### NORTHEASTERN KENTUCKY

There was a most decided slump in production, not more than 75,000 tons or 30 per cent of capacity being mined. "No markets" were responsible for more than 50 per cent loss and there was a marked slump in prepared demand.

#### VIRGINIA

Production continued at the rate of about 60 per cent with only the larger plants in operation. Inquiries were being received but the best prices which could be obtained from these were lower than producers generally could afford to accept.

## Southern Appalachian

### SOUTHEASTERN KENTUCKY

*Dull Period Closes Many Mines—Market Stagnant and Prices Sag.*

The dulllest period of the year is now being faced and many more mines are down for want of business. This leaves only two or three of the larger operations running in the Straight Creek field. Many mines in Harlan County are also being closed and it is reported that the majority of those now running will soon cease operation unless conditions improve very materially.

With practically no demand, prices have fluctuated a great deal, good Harlan and Straight Creek block being sold \$3@3.75 and slack, 90c.@1.25.

## Middle West

### MID-WEST REVIEW

*Market Extremely Stagnant—Domestic Stocks Topheavy—Steam Coals in Ruinous Competition—Check-Off Settlement Necessary.*

The coal market in the Middle West went to depressing levels last week, as practically no interest was shown by the public in purchasing either steam or domestic coals.

The domestic market proved to be particularly poor. Usually at this time of the year operators who produce a good domestic coal are swamped with orders, as late November is the peak of the season. The week's business booked by operators with mines in Indiana and Illinois does not equal the tonnage booked, for instance, in any week in July. In short, the domestic market can best be described as being in a state of paralysis, and whether or not this is merely a temporary phase or is going to prove permanent for the rest of the winter, is a matter under discussion.

The general outlook is pessimistic. The weather during the last week or so, has been unseasonably warm. This, of course, had some slight influence on the market, but not enough to have affected it entirely. Retail dealers have bought far more coal than they need. This has arrived and is in their bins, if they have the bin room, but more generally the coal is on the ground, as the great

majority of dealers long since filled their bins to overflowing and are utilizing storage space in the open in the vicinity of their yards or along railroad sidings.

The public is not buying, largely because they haven't the money. The writer happened to be in a little town in Ohio during the early part of the week. The dealer there had his bins full to overflowing and advised us he saw no prospects in the immediate future for emptying them, as the farmers in a great many cases are so badly hit they have been unable to purchase more than one ton or so at a time, when they have been able to purchase at all, while in a great many cases they have discontinued the use of coal entirely, relying rather on the wood pile. Dealers report it is an easy matter to sell coal if one wishes to sell it to people of doubtful credit.

Steam markets are very dull. Illinois and Indiana operators have suffered to some extent from inroads of Eastern coal, as Eastern steam fuel has been shipped into Indiana as low as 60c.@75c. The Indiana operators are trying to hold their coal firm at \$1.25 and in some cases \$1.50@1.75. Industries in the Middle West are not operating enough to consume even the meager tonnage which our mines are producing from week to week. Competition has reached the point where it is extremely harmful and prices on distress coal are consequently slashed to levels as much as \$1 a ton below cost.

Unemployment in the industrial centers is general and the number of unemployed in some of our manufacturing centers is increasing rather than decreasing, as the daily press would have us believe. In a great many communities local organizations of business men have had to get together to raise money in order to keep the unemployed from actual want and suffering.

The coal trade is in a state of uncertainty and this unsatisfactory state of affairs will continue until the Circuit Court-judges in Chicago come to a definite decision in regard to Judge Anderson's injunction against the check-off. Operators and wholesalers are having a difficult time to define their policy until a decision is reached. It is hoped that this will come at an early date. To say the least, the atmosphere of suspense is harmful to all concerned.

#### INDIANA

*Warm Weather Hurts Retail Trade—Steam Market Extremely Sluggish.*

Although prices, especially for domestic, appear to be a trifle stronger, the demand for any of the various grades is subnormal. Retailers declare that only approximately half the domestic coal for the winter has been placed. They have been doing all that possibly could be done to stimulate this sort of buying, but the public generally has turned deaf ears toward all warnings.

Most of the retailers have fair stocks. The big contributing factor in the slow movement of domestic coal has been the weather. There has been virtually no low temperature up to the present time.

Steam prices show no change. Because of a variety of quotations, it is difficult to get at an average price. Coal is selling at the mines for what it will bring, depending on how badly the company needs the money. For a time it seemed that the demand was increasing,

but during the past week there has been a severe slump. Many industries have failed to increase their production as was expected.

### SOUTHERN ILLINOIS

*Mild Weather Brings Congestion at Mines—Screenings Are Short—Domestic at Standstill — Railroad Tonnage Light.*

Conditions in the Cartersville field are as bad now as at any time during the summer. A month ago there was a plentiful supply of everything except lump. Today lump is the cause of most of the trouble and screenings are now short. Domestic business is almost at a standstill everywhere. A little tonnage moves to the North. Elsewhere even inquiries are few.

Some mines have been idle for a week at a time. This has caused the independents to cut prices on all sizes and some quotations from the regulars

are below the circular. Railroad tonnage has been light the past week. Car supply is plentiful.

Somewhat similar conditions prevail in the Duquoin field and in Jackson County, although working time at some mines is not as good as the Cartersville average. Mt. Olive field conditions are beginning to cause distress among the miners. There seems to be no demand for either steam or domestic. Such screenings as are produced apply on contracts. Railroad tonnage keeps up fairly well.

The Standard field is feeling the effects of the warm weather to a worse extent perhaps than the other districts. It is almost impossible to move lump, while mines having railroad orders of mine run are about the only ones showing any steady work.

Domestic business in St. Louis has almost stopped on Standard coal. Steam business is fairly good on screenings. Operators are holding these back

anticipating higher prices if warm weather keeps on, which will curtail production. Prices are shown in the Weekly Review.

### WESTERN KENTUCKY

*Demand Slow and Production Being Curtailed—Screenings Weaker but No Overproduction—River Markets Sought.*

Operators are reducing production as the market is unable to absorb a heavy output. Mines are operating around two days a week. Screenings are hard to sell, but with production of prepared sizes considerably off, screenings are not seriously affected.

Western Kentucky is endeavoring to develop a better market on the lower Ohio and Mississippi, and there is a slow but steady increase in the amount of river equipment owned by operators. One large company is reported to have very well laid plans for barging coal to New Orleans, for export to Cuba.

## News Items From Field and Trade

### ILLINOIS

A. Mitchell, of the Mitchell & Dillon Coal Co., has been appointed commercial arbitrator for the Chicago Wholesale Coal Shippers Association. He will act with arbitrators to be selected by the operators and retailers. His selection was recommended as a means of co-operating with the Chicago Association of Commerce in coal matters. The arbitrators will constitute a standing committee to represent the trade in disputes within or without the coal trade itself.

The Binkley Coal Co., Chicago, has filed notice of increase in capital from \$100,000 to \$500,000 for proposed expansion.

A force of coal drillers are prospecting in the Elk Prairie coal field for the Nason Coal Co. of Chicago. This company expects to establish a mining site in the south part of Elk Prairie. Some surface land has already been bought by the company in that section.

### INDIANA

The Ayrshire District Collieries Co., at Francisco, has increased its capital stock from \$650,000 to \$750,000.

Fire, which has smoldered in the Whitcomb Mine, west of Clinton, for more than a year, recently broke out near the lateral entry off the north main entrance of the mine, making it necessary to close operations until repairs are made.

The Fort Dearborn Coal Co. has announced that it will discontinue the district office in Indianapolis. Representatives in the Indiana districts will hereafter report to the main office of the company in Chicago.

### KANSAS

The Atchison coal mines, heretofore held by the Carlisle and Waggener coal companies, have been acquired by W. L. Cook and Frederick Evans, Kansas City, Mo. The new owners plan to operate the property, which has been idle for a number of years past. New pumping machinery and operating equipment will be installed at an early date.

### KENTUCKY

J. O. Watson, of Fairmont, W. Va. was a recent visitor in Pineville in connection with his interest on Puckett's Creek, Harlan County.

L. A. Powell of the Alex. Y. Malcomson Coal Co., Louisville was in Pineville recently.

The Central Kentucky Block Coal & Mineral Co., Lewisport, is arranging for

the immediate development of a large tract of coal property in that section. The company has a site aggregating about 20,000 acres, a portion of which only will be used at the present time. N. A. Cramer is manager.

Judge A. M. J. Cochran, of the Federal District Court, Lexington, has issued an order preventing F. M. Maxey, Henry M. Miller, Charles W. White, or the Maxey Development Co., from interfering with the Fidelity & Columbia Trust Co., Louisville, receivers for the Columbia-Panama Coal Co. The order enjoins them from interfering in any way with the receiver in taking possession of all properties of the company.

Andrew P. Hillenbrand, Sr., Andrew P. Hillenbrand, Jr., and Oscar Hillenbrand, operators of the Progress Pressed Brick Co., have taken over the J. H. Beckett Coal Co., Louisville, and will operate as the Progress Coal Co.

Harry H. Kallaway has assumed general supervision of the Kentucky interests of the Bertha Coal Co., Pittsburgh, which includes the Sarah, Elsie and Jessie mines at Dalna, as well as the Isabella Mine at Blackey.

### MISSOURI

The Central Missouri Coal & Mining Co., Jefferson City, recently organized, is preparing a list of machinery and equipment for installation at coal properties at Hi-bernia, where extensive development is planned. The equipment will comprise boilers, engines, conveyors, pumping apparatus and general mining machinery. A railroad line will be installed at the mines. John McManus, secretary-treasurer, is in charge.

### NEW YORK

George M. Carpenter, Sr., European manager of the New York Coal Export Co., Inc., New York City, with headquarters in Paris, France, arrived on the French line steamer La Savoie. Mr. Carpenter has been in Europe, in the interest of the above company, for the past eight months.

Edward H. Zimmerman, New York manager of the Imperial Coal Corporation, returned recently after a tour of New England.

T. B. Cross of the Davis Colliery Co. was in New York on business recently.

H. B. Martin of the W. H. Greene Coal Co. and the Greenmar Coal Co., with headquarters at Elkins, was a recent visitor in Weston.

E. T. Christmas, formerly manager of the coal and coke export department. W. R. Grace and Co., New York City, has re-

signed to become resident manager in New York City of the Stonega Coke and Coal Co. and Wentz Co.

The Combustion Engineering Corporation, New York City, recently opened two branch offices, one at Charlotte, N. C., and the other at Seattle, Wash., where it is represented by Fryer-Barker Co.

### OHIO

Following an agitation in which practically all coal operators and shippers of Ohio took a part, Governor Harry L. Davis of Ohio has given orders to the reorganized purchasing department that nothing but Ohio-mined coal shall be purchased for state institutions. This rule is to be adhered to without question during his administration. The question came up because of a purchase of West Virginia coal at an advance of \$1.11 over the price for which Ohio coal of the same grade could be purchased.

The Peerless Lime & Coal Co., Canton, has been chartered with a capital of \$50,000 to mine coal, lime and other materials. Incorporators are B. F. James, August Helman, Felix Shipley, Albert Ess and Joseph A. Seifert.

Secretary R. R. Yeagley of the Indiana Retail Coal Merchants' Association was a recent visitor to the Cincinnati wholesale trade.

George Stahmer, president of the Fort Dearborn Coal Co., visited the Cincinnati offices of his corporation while returning to Chicago after a visit to the mining districts South and East.

C. H. Jenkins, general manager for the Hutchinson Coal Co., of Fairmont, W. Va., visited the Cincinnati offices of that corporation recently.

Homer L. North is now the Akron representative of the Wholesale Coal Co., Pittsburgh, succeeding T. J. McNamara.

### PENNSYLVANIA

The Marlon Mine of the West Penn Coal Co., near Udell was put into operation recently after having been idle since last December. For the present the company will confine its activities to shipping coal, with the hope that before long manufacture of coke will be resumed.

The Laurel Mining Co., of which H. M. Kephart of Connellsville is president, resumed operations recently at its plant a mile west of Confluence, along the Western Maryland. The resumption marks the completion of improvements which have been in progress for several months. The tipples have been rebuilt, conveyors covered and a bin of 300 tons capacity erected.

In a spectacular fire that could be seen for miles, the tippie at the Tremont mine of the Pittsburgh Coal Co. between Fayette City and Belle Vernon, was completely destroyed recently. The loss will reach about \$20,000.

George M. Crawford has withdrawn from the management of the Pittsburgh Mining Machinery Co. to form the Crawford Machinery Co., House Building, Pittsburgh. The new company will represent the S. Flory Manufacturing Co. in that district.

The Pittsburgh & Erie Coal Co. is taking advantage of being shut down by experimenting with an Oldroyd mining machine and an improved Halby loading machine in the mine at Brazzell.

Holders of warrants for mineral rights under navigable rivers in Pennsylvania are not entitled to a patent from the State, if a long period of years is allowed to elapse after the issuance of the warrant. The West Penn Power Co. called in the Department of Internal Affairs, which issues patents to make a ruling on this matter and this department referred it to the Attorney General. The latter held that the company is not entitled to the rights. The warrant, now in the possession of the power company, was granted to A. M. Fulton in 1864, the survey having been returned to the Land Office and accepted in 1865. The Attorney General's Department in an opinion points out that the river was declared navigable by an act of 1798. An act of 1848 authorized the Surveyor General to issue warrants for areas not exceeding one hundred acres in the bed of any public navigable river in the State. The act of 1848 required payment of the purchase money to be made to the State within ten years. In this case the warrantee waited fifty-seven years before asking for the patent, and the state held him guilty of laches and of failure to comply with the statutory requirements and hence not entitled to a patent.

Improvements costing \$107,000 are being made to the Audenried colliery of the Lehigh & Wilkes-Barre Coal Co. in the Hazleton district. Among the additions are office quarters and a wash house for employees. The work has been under way for some time and will be completed within two months.

A state charter has been issued to the Gordon Co. of St. Benedict. The capital stock is \$30,000 and the purpose of the company is mining and preparing and shipping coal and the manufacture of coke. J. W. Peale, New York City, is treasurer and one of the incorporators, the others being G. E. Metzger, St. Benedict, Pa., and F. D. Peale, Summit, N. J.

Robert MacFarland, of Springdale, Allegheny County, has resigned as superintendent of the Oakmont Mine of the Diamond Coal & Coke Co., and has been succeeded by David Ryan, of Brownsville.

The H. C. Frick Coke Co. has decided to replace the old tippie at the Whitney plant of the Hostetter-Connelville Coke Co. with a new tippie of modern design and much larger capacity.

F. F. Dickerman has been appointed receiver for the Georges Creek & Phoenix Mining Corporation, of Phoenix Crossing, Md., on a bill in equity filed by a creditor and with the consent of the company to a receivership being created. The company has an office in Philadelphia. It has valuable mining properties in Maryland, and has contracts with New York penal institutions and various railroads. It is claimed the company is solvent, having assets of approximately \$200,000, against liabilities of \$134,000.

Johnstown and New Florence capitalists have organized a company to be known as the S. E. Dickey Coal Co., with headquarters in Johnstown, for the purpose of operating coal mines at New Florence on a tract of 1,380 acres of valuable coal land in that section. The coal is said to run 8,000 tons to the acre and is adjacent to the main line of the Pennsylvania.

The Pennsylvania Department of Mines will soon call a conference of the inspectors of both the anthracite and the bituminous regions to take further action regarding the prevention and subduing of mine fires. Many of these which in some instances have produced serious results have originated in abandoned mine workings.

## TEXAS

The Darco Corporation, a subsidiary of the Aetna Powder Co., has begun the erection of a plant in Marshall, to cost \$1,500,000, for the reduction of Texas lignite in the production of carbon to be used in the manufacture of numerous products. A tract of land underlaid with thick veins of lignite has been purchased by this company about ten miles from Marshall, and a standard gage railroad will be built from Marshall to the mines.

The City Ice and Fuel Company of San Antonio, which conducts a retail coal business, has filed an amendment to its charter increasing the capital stock from \$85,000 to \$112,500.

The Denver Ice and Fuel Co. of San Antonio, which does a retail coal business in that city, has been incorporated with a capital stock of \$50,000. Incorporators are: Charles H. Gurinsky, B. Uhlig, Claude A. Nichols and J. E. Goggenshall.

New loading racks have been built and other new equipment installed at the Bowie Coal Mines, near Bowie, which reopened recently after a long shutdown.

The Anderson County Coal Co. has been organized at Palestine, and charter filed with the secretary of state. The company is capitalized at \$100,000 and the incorporators are: J. J. Barry, Thomas F. McGinn, W. J. Marshall and others. The company will develop extensive lignite beds in Anderson County near Palestine.

## UTAH

The Utah Steel Corporation's plant may be considerably enlarged in the near future as a result of a merger with a California concern. Prominent coal men of Salt Lake City are interested in the project.

A group of 23 representative Salt Lake City business men were shown around several of Carbon County's large mines in connection with a plan of the Price Commercial Club to interest business men of the state in the city and county.

## VIRGINIA

The Richmond office of the Interstate Coal & Dock Co., has been closed and its business moved to Norfolk. Several transfers have been made in the Baltimore and Washington offices of this company.

The Heaton Coal Co. of Tacoma is planning development work, involving the purchase of electrical coal mining equipment. L. L. Heaton is president.

B. S. Wright, Norfolk manager for the Callaghan-Atkinson Co., has returned from New York where he had been on business.

Cosgrove & Wynkoop Co. has announced the closing of its Norfolk office, the business to be handled by another coal agency to be announced later. W. A. Shea, manager goes to the New York offices.

## WASHINGTON, D. C.

The Gans Steamship Line, in a brief filed in the Supreme Court, opposes the application of Barber and Co., and the Nova Scotia Steel and Coal Co., for review of the \$200,000 judgment in the lower court against the latter companies for failure to deliver a vessel at a fixed time under a charter party.

The Navy Department was sharply rebuked when the House Committee on Appropriations recently declined to recommend any of the more than \$27,000,000 additional funds requested for the current year. Included in the amount was \$12,500,000 for fuel for the balance of the year ending June 30, 1922. The committee took the position that Congress had refused these appropriations at the last session and that the Navy should have shaped its policy accordingly. At the last session the Navy requested thirty million dollars for fuel, which was cut to ten millions by the House. A revised estimate of 17½ million dollars was adopted by the Senate and reluctantly agreed to by the House.

Because it advanced for argument a rate case from Texas and the New York gas rate case the Supreme Court did not reach the Morrisdale Coal Co. case under the Lever Law for argument as had been scheduled. The coal case will not be argued until Dec. 5.

Representatives of the Stoker Manufacturers' Association of America have tendered the services of that association to the Department of Commerce and have expressed willingness to co-operate in any way with the department so as to make available reliable information in connection with the manufacture of mechanical stokers. The representatives also are interested in coal classification, which they discussed with officials of the Bureau of Mines. They urged that coal be sold and statistics collected on a B.t.u. basis.

Publication in England of the statement to the effect that Secretary Hoover has suggested the formation of an association which would include producers, consumers, dealers, transportation companies and all others importantly interested in coal has been called to Secretary Hoover's attention.

He has made no such suggestion and the coal specialists at the Department of Commerce were at a loss to know on what such an article was based.

## WEST VIRGINIA

President L. B. Ramsey of the Logan Fuel Co., which has its main office at Charleston, was in Logan County field during the latter part of October.

T. W. Arnett, president of the Antler Coal Co., Fairmont, has returned from a business trip to Cleveland. During his absence he was also present at a meeting of the Scottish Rite Masons and Osiris Temple Mystic Shriners at Wheeling.

A recent visitor in the Fairmont field was C. K. Brown of Morgantown, assistant director of mining extension school work at the West Virginia University.

R. B. Isner, who only recently became connected with the Old Dominion Coal Corporation is convalescing from a recent illness during which he was confined in a hospital at Charleston.

W. W. Woodruff of the Woodruff Coal & Iron Co., Pittsburg, was a recent business visitor in the Monongalia County field.

T. H. Johnson, of Bellaire, Ohio, president of the Chesapeake Coal Co. spent a few days in the Fairmont region recently, inspecting the plant of the company in which he is interested.

Carl Scholz, of Charleston, vice president and general manager of the Raleigh-Wyoming Coal Co., made a trip to Chicago recently on business connected with the company in which he is interested.

A visitor recently in the Charleston market was Fred Legg of Cincinnati, president of the Logan & Kanawha Coal Co.

A recent visitor at Heywood Junction was A. D. Carr, of the Seminole Gas Coal Co., Cincinnati, which operates the mining plant at that point.

W. J. Kelley of the Main Island Creek Coal Co., with headquarters at Huntington, paid the Cincinnati office of this company a recent visit.

The following coal companies in West Virginia have recently increased their capital stock: Dartmouth Coal Co., from \$75,000 to \$100,000; Harlan Coal Co., from \$400,000 to \$800,000; Union Fuel Co., from \$50,000 to \$100,000; Canyon Coal and Coke Co., from \$500,000 to \$750,000; Kelley's Creek Colliery Co., from \$1,400,000 to \$1,900,000; Rex Colliery Co., from \$150,000 to \$175,000.

The Greenmont Coal Co., the Preston Coal Co. and the Ishpeming Coal Co. have filed certificates of dissolution in the office of Secretary of State of West Virginia and the Homestead Coal Co. has surrendered its charter. The Deaker Hill Coal Co. has withdrawn from the state.

C. E. Cowan, chief engineer of the Jamison Coal & Coke Co., with headquarters at Greensburg, Pa., spent a few days in the Fairmont region recently.

Early in September a preliminary organization of the Mary Elizabeth Coal Co. of Huntington was affected and general offices established by the company. H. H. Morris, who controls much of the stock in the new company, was chosen as its first president and much of the stock has been subscribed for. Development of the property of the new concern comprising about 2,000 acres in the Sewell seam located on the Milan Fork branch of the Virginia Ry. in Wyoming County is now under way and will be rapidly completed.

Wheeling people are behind the newly organized Aetna Development Co., which with a capital stock of \$150,000 will be active in the Northern Panhandle region. Principally interested in the new concern are Charles L. Sonneborn, John E. Stevenson, Charles C. Woods, Henry G. Stifle and Edwin F. Kline, all of Wheeling.

## ALASKA

The general landoffice field agent reports that there has been some recent development on a vein of lignite on Chicken Creek, but that lack of transportation prevents a general use of the coal. The Government coal mine at Eska Creek was closed in September for the winter. Evan Jones has prospected a large vein of coal on his leasing unit and will supply coal for the local market and the Government railroad. The Navy has been doing considerable prospecting work near Chickaloon and Coal Creek and hopes to develop a high grade coal.

## Traffic News

In the complaint to the I. C. C. the **Smokeless Fuel Co. and others**, of Charleston, W. Va., allege unreasonable demurrage charges on coal for transshipment by vessels at Norfolk and Lambert's Point, Va.

**Mark McFadden** and others of Detroit allege unreasonable rates on anthracite from mines in Pennsylvania to Detroit during Federal control.

The **Illinois Coal Traffic Bureau** has been allowed to intervene in the complaint of the **Milwaukee Association of Commerce** relating to rates on hard and soft coal from Duluth and Superior, which are alleged to be prejudicial to Milwaukee.

A petition has been filed with the State Public Utilities Commission of Utah by the **Bamberger Electric R.R.** asking that the Utah Ry. be directed to institute joint through rates on coal from points to Ogden. A similar request in which the Utah and Los Angeles roads were defendants, was rejected a short time ago on the ground that to grant it would be equivalent to making the U. P. system "short haul" itself between Provo and Ogden.

In response to the Jones Resolution the Interstate Commerce Commission has transmitted to the Senate copies of contracts and agreements of American railroad companies with foreign steamship lines and Senator Ransdell, La., has introduced an amendment to the pending railroad funding bill to forbid settlements thereunder with roads acting as party to such agreements. Among the agreements, which appears to be the oldest, and which was to operate indefinitely, was one executed in 1867 between the Baltimore & Ohio and the North German Lloyd Steamship Co., for service between Bremen and Baltimore, under which the railroad agreed to build in Baltimore Harbor an adjoining coal yard. It was also stipulated that the railroad should deliver always for the use of vessels at the pier a sufficient quantity of the best fresh Cumberland coal at a price that was to be always 50c. under the market price at Baltimore and never exceeding \$5 a ton.

The I. C. C. has authorized the **Great Northern Ry.** to establish rates on coke between Duluth and Wadena, Minn., the same as rates by the direct line between these points and to maintain higher rates at intermediate points. This authority shall not include intermediate points as to which the haul is not longer than that of the direct line between competitive points. The rates from Duluth to other intermediate points such as Albany to Hewitt shall not exceed the rate to Avon by greater amounts than the present rates to these intermediate points exceed the present rate to Avon. The rates shall not exceed the lowest combination of rates.

The **Alabama, Tennessee and Northern Railroad Corporation** has requested authority to execute an agreement with the Coal and Iron National Bank of New York as lessor covering 250 gondola cars and 50 flat cars and to issue \$372,000 of 6 per cent equipment trust notes thereunder.

The **Lou-Nash Coal and Mining Co.**, operating a mine at Rentchler Station, is seeking assistance of the Illinois Public Utilities Commission to compel the Louisville and Nashville to install a switch at the mine.

## Obituary

**Albert E. Smith**, 78 years old, president of the Liverpool Salt and Coal Co., Hartford, W. Va., and for many years a resident of Cincinnati died recently at Hartford, following a paralytic stroke. Mr. Smith had been in Hartford on business for a week and was preparing to return to Cincinnati when he was stricken and died several hours later. He was also president of the Jackson Coal Co., Cincinnati.

**Eugene Frank Hartland**, manager of the Pittsburgh office of the F. A. Fish Coal Co., Toronto, died recently in Pittsburgh. Mr. Hartland was widely known in the coal trade in Ontario and throughout the Pittsburgh coal fields and will be remembered as having had charge for some time of the gas coal distribution of the Fuel Administration.

Numerous applicants are already in the field as the successor to **Thomas K. Adams**, Mercer, Pa., bituminous inspector who died

recently. He was an inspector for forty years, being the oldest in point of continuous service and in years in the state's employ.

**Charles F. Randolph**, for the past seven years New York sales agent of Thorne, Neale & Co., died recently at his home at Tuckahoe, N. Y. He was at one time a director of the Wholesale Coal Trade Association of New York and had a wide circle of friends in the coal trade.



JOHN A. VERNER

With deep regret *Coal Age* chronicles the death after a brief illness, Oct. 10, 1921, of John A. Verner, one of the early state mine inspectors of Iowa. Mr. Verner was born and educated in Germany. He came to this country in the early seventies and as state mine inspector in Iowa for thirteen years was held in the highest esteem by all who knew him. Mr. Verner was a charter member of the Mine Inspectors' Institute of America. He was a strong advocate of the dangers of coal dust in creating and propagating mine explosions. Few men were better read in mining literature than Mr. Verner and his loss will be keenly felt by his many friends and associates.

## Association Activities

### New River Operators' Association

Conditions of inactivity in the New River field received the principal attention of operators at a meeting of the association held in Charleston on Nov. 9, the meeting bringing forth a large attendance. It was stated, as a matter of fact, that the attendance was larger than at any meeting in recent years.

Lack of market has caused a suspension of operations at fully three-fourths of the plants in the field, high wage costs eliminating producers from the market. As matters now stand, coal cannot be sold at prevailing prices except at a loss. C. C. Beury, head of the Beechwood Coal & Coke Co., presided in the absence of G. H. Caperton, who was out of the city. Although no mention was made of the "check-off," it is presumed that the meeting was originally called to consider that question.

### Morgantown Wholesale Coal Association

The association is continuing its regular meetings at Morgantown, where it is holding weekly dinners. At the last meeting a number of questions of importance in the trade were discussed, the discussion taking a wide range. Although business conditions are not what might be regarded as very favorable, the opinion was expressed that better things might soon be looked for in the coal trade.

### Northern West Virginia Operators' Association

Although the meeting seems to have been originally called for the purpose of considering the check-off decision, yet that question was not under official considera-

tion at a meeting of the association held at Fairmont on Nov. 10. There were however fully 50 members of the association in attendance. Much time was devoted to a discussion of the Ohio freight rate differential, Secretary George S. Brackett, submitting a report on the hearing held by the I. C. C. at Atlantic City which he attended. Expression was given to the belief among the members that the West Virginia side of the case had been well presented and that on the basis of the evidence thus presented the commission would not sanction any widening of the differential.

### Alabama Mining Institute

The Alabama Coal Operators' Association has been dissolved and the membership organized into the Alabama Mining Institute. Frank H. Crockard, president of the Woodward Iron Co., has been elected president of the institute, and Frank Nelson, Jr., vice president, with James L. Davidson as secretary. All of these officials held the same positions with the old organization. The aims and activities of the institute will be directed along practically the same lines as followed by the operators' association, but the membership will include men from every branch of the mining industry.

## Publications Received

**Some Conditions Affecting the Usefulness of Iron Oxide for City Gas Purification**—University of Illinois. Bulletin 119. Pp. 62; 6 x 9 in. Charts and tables. Prepared under a cooperative agreement between the Engineering Experiment Station of the University, the Illinois State Geological Survey, and the Bureau of Mines.

**Investigation of Warm-Air Furnaces and Heating System**—University of Illinois. Bulletin 120. Pp. 45; 6 x 9 in.; illustrated; charts and tables. The third bulletin of a series on warm-air, furnace research by the Engineering Experiment Station.

**The Monroe Gas Field**—State of Louisiana, Department of Conservation. Bulletin 9; pp. 99; 6 x 9 in.; illustrated; maps and tables. Published by the Department of Conservation in cooperation with the Bureau of Mines. Report from the gas field located in the Parishes of Ouachita, Morehouse and Union.

**The Determination of Oxides of Nitrogen**—Department of the Interior, Bureau of Mines. Technical Paper 249. Pp. 13; 6 x 9 in.

**Researches on Modern Brisant Nitro Explosives**—National Research Council, business address: Secretary, National Academy of Sciences, Smithsonian Institute, Washington, D. C., pp. 35, No. 15, 7 x 10 in.

**Coke Oven Accidents in the United States**—Department of the Interior, Bureau of Mines. Technical Paper 293. Pp. 31; 6 x 9 in.; charts and tables. Covers accidents at coke ovens during the calendar year 1920.

## Coming Meetings

**The American Institute of Consulting Engineers, Inc.** will hold its annual meeting Jan. 16, 1922, at the Engineers' Club, 32 West 40th St., New York City. Secretary F. A. Molitor, 35 Nassau St., New York City.

**West Virginia Coal Mining Institute** will hold its next meeting Dec. 6 and 7 at either Charleston or Huntington, W. Va. Secretary, R. E. Sherwood, Charleston, W. Va.

**New England Wholesale Coal Association** will hold its annual meeting Jan. 10, 1922, at Boston, Mass. Secretary, R. S. Townsend, 27 Kilby St., Boston, Mass.

**Southern Appalachian Coal Operators' Association** will hold its next meeting Jan. 27, 1922, at Knoxville, Tenn. Secretary, J. E. McCoy, Knoxville, Tenn.

**Pike County Coal Operators** will hold their annual meeting Jan. 6, 1922, at Pikeville, Ky. Secretary, F. E. Miller, Pikeville, Ky.

**The Coal Mining Institute of America** will hold its annual meeting at Pittsburgh, Pa., Dec. 7, 8 and 9. Secretary H. D. Mason, Jr., Chamber of Commerce Bldg., Pittsburgh, Pa.

**American Society of Mechanical Engineers** will hold its annual meeting Dec. 5-9 at the Engineering Societies' Building, 29 West 39th Street, New York City. Secretary Calvin W. Rice, 29 West 39th Street, New York City.